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PzKpfw 38(t)

in action

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PzKpfw 38(t)
in action

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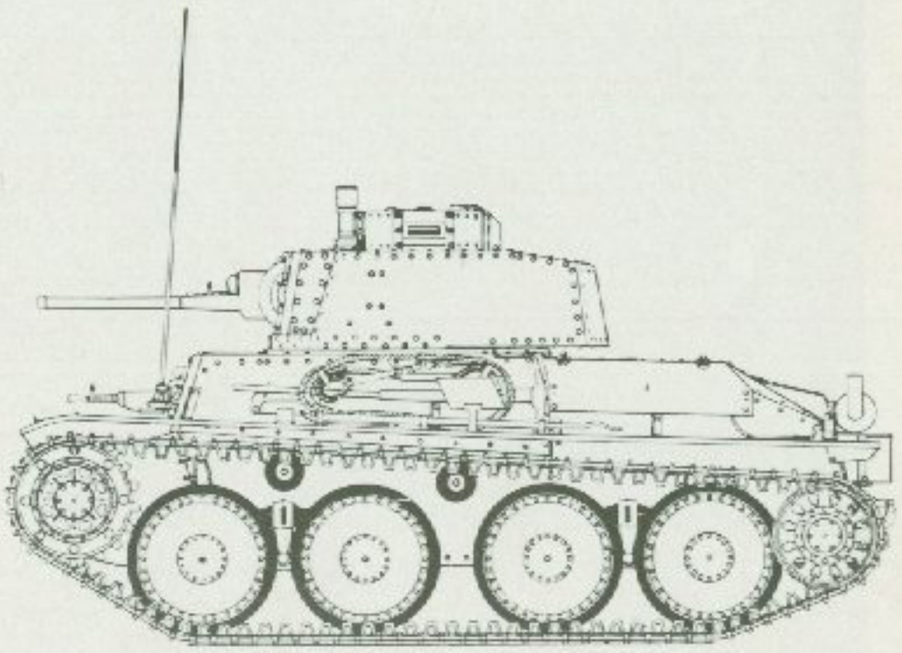

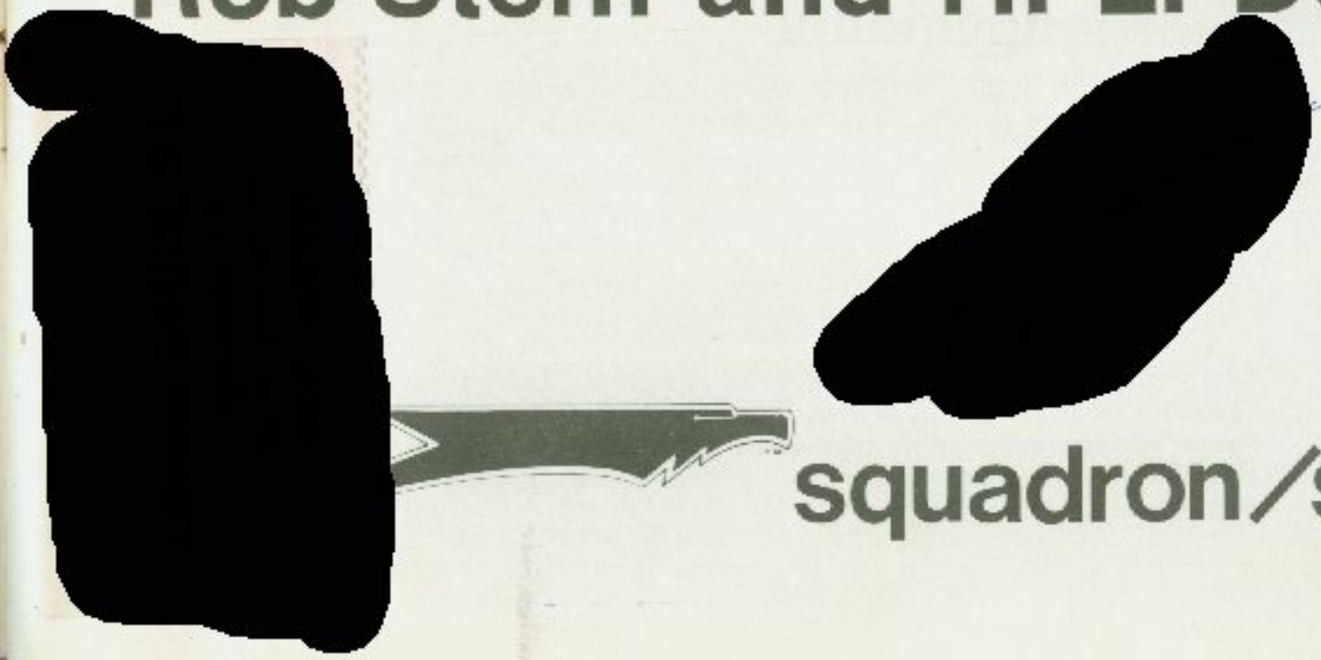

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A PzKpfw 38(t) ausf D, seen in Russia in the summer of 1942. 105 ausf Ds were produced, and some were used as command vehicles since they were no longer effective battle tanks. The burning T-34 was destroyed by the PzJag 38(t) which, ironically, mounted the excellent 7.62cm Russian antitank gun.

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This PzKpfw 38(t) ausf B, probably of PzRgt. 10, 8th Panzer Division, is seen advancing through a field during the invasion of France, 1940. The 7th and 8th Panzer Divisions were equipped with PzKpfw 38(t)s. Note the angled front plate and the turret machine gun, which was aimed independently of the main gun. (Bundesarchiv)

PzKpfw 38(t) Development

Before the Second World War there were in Czechoslovakia two industrial concerns which were engaged in the construction and manufacturing of tanks. One of them was SKODA in Pilsen. The other one was CKD.

CKD (full name CESKOMORAVSKA-KOLBEN-DANEK) as the name implies, was formed by a merger of old established engineering firms. Gradually, as the concern grew in size and power, it was acquiring other companies. One of the acquisitions was the PRAGA works, makers of trucks, tractors and passenger cars. Most of the CKD factories were located in Prague. CKD was not an armaments manufacturer like SKODA, but was supplying the Czechoslovak army with trucks and tracked artillery tractors. They were ideally suited for tank production and were quick to seize the opportunity when the army was looking for a manufacturer of a tankette in 1932. Their design, which was a modification of the Carden-Lloyd tankette, was not very successful, though the army ordered 70 tankettes in 1933.

CKD was not happy with the tankette either and immediately, on their own initiative , started development of a light tank, the P-II. It had a SKODA 3.7 cm gun in a fully rotating turret and two machine guns. Though it had its shortcomings, it was a dependable, simple and rugged vehicle. The army bought 50 of them in 1934 and they soldiered under the designation LT vz.34 up to 1939.

In the years 1933-1934 SKODA used all their influence with the General Staff and pushed through acceptance for construction of a light tank, the LT vz.35 (later PzKpfw 35(t)). Over the next three years, this became the main tank of the Czechoslovak army, despite its grave shortcomings.

CKD at the same time had perfected their two new designs, the AH-IV tankette and the TNH series of light tanks. As the domestic market was closed to them, they began exporting these vehicles to many countries.

First, fifty vehicles of the AH-IV type were sold to Iran in 1935, followed by 35 to Rumania in 1936 and finally 48 tankettes to Sweden in 1937. The AH-IV had a weight of four metric tons, 15 mm armor and, with a 6 cylinder PRAGA engine , was capable of speeds of up to 45 km/hour. It carried a two man crew. Its main armament was a heavy machine gun in a fully revolving turret and a light machine gun in the front of the hull operated by the driver. It was again a simple and rugged vehicle with good cross-country performance and a radius of action up to 250 km.

A logical development from the AH-IV tankette was the light tank TNH. Introduced in 1935, it carried the 3.7 cm SKODA gun and two heavy machine guns, the famous ZB vz.35 which was later manufactured during the war in England under the name BESA. The tanks were completed according to the buyer's specifications. Their weight, depending on the armor and equipment, varied between 7.2 and 8.8 metric tons, with maximum armor thickness between 25 and 32 mm. They carried a new PRAGA 6 cylinder engine of 7,150 cc displacement, which developed 125 HP at 2,200 R.P.M. This gave the tanks a maximum speed up to 50 km/hour, and a radius of action between 200 and 250 km. These tanks were pretty small, only 4.5 m long and slightly over two meters wide, but very rugged. The standard crew was three men.

The first fifty TNH tanks were ordered by Iran and delivered in 1937 in a tropicalized version. Peru bought 24 vehicles of the LTP type in 1938. Switzerland ordered 24 LTH tanks in 1937. These were equipped with Sauer-Aarbon diesel engines and 2.4 cm Oerlikon guns. Switzerland also bought the license for manufacturing these tanks and used the chassis as a basis for SP guns.

Sweden ordered 90 tanks of the TNH Sv type in 1939. These tanks were being manufactured by CKD, but they were seized by the Germans and never delivered. But in December 1940 the license for manufacturing the PzKpfw 38(t) was granted to Sweden. Scania Vabis manufactured from late 1942 220 of the Stvr m/41 tanks, as they were designated in the Swedish army, which used them up to 1957. The chassis proved so reliable that in 1959 the armored personnel carrier Pvb 301 was developed and all the Swedish m/41 tanks were rebuilt between 1959 and 1963.

The last export order was placed by Latvia in 1938 for 21 vehicles of the LTL type, armed with a 2 cm Oerlikon gun and two machine guns. These tanks were never delivered because of the war.

The rearmament program of the Czechoslovak army allowed sufficient funds to order more tanks in 1937. By now the LT vz.35 SKODA tanks were so unpopular in the technical branches of the army that no more tanks of this type were ordered. Instead, a special group was originated within the armored corps with the task of testing exhaustively all the new prototypes. New orders were to be placed only after the results of these tests were known.

CKD entered their TNH tank, which quickly proved superior to all the other entries. It was lighter, more robust, had a higher speed and better endurance than the SKODA types and was of a much simpler construction. During a successful three and a half month test it logged 5,584 km, of which 1,954 km was in heavy terrain, without a single serious defect. Its upkeep was easy and did not require more than thirty minutes per day.

Based on the results of these tests, the decision to adopt the TNH tank as a standard light tank of the army, the LT vz.38, was made in July 1938. One hundred and fifty of these tanks were ordered immediately.

The first twenty machines were supposed to be delivered before the end of

A CKD AH-IV tankette of the Rumanian army (Rumanian designation R-1) during the victory parade in Bucharest, Autumn 1941. All the R-1 tankettes were assigned to the First Royal Cavalry Division. (Authors)

1938 with the remaining 130 vehicles before the end of May 1939. But after the Munich agreement all the special emergency appropriations were revoked and the production was slowed down considerably. The first nine tanks were delivered on May 22, 1939 to the Germans, who had occupied Czechoslovakia on March 15, 1939.

The Germans not only seized all the equipment of the Czechoslovak army, including the 219 tanks of the LT vz.35 type, but were quick to realize the value of the LT vz.38 for their Panzer Divisions. The LT vz.38 was vastly superior to the PzKpfw I and II both in armor and firepower and was as good as the current versions of the PzKpfw III. Therefore, in May 1939 CKD was ordered to step up the production of the LT vz.38, now designated PzKpfw 38(t), and finish the 150 tanks ordered. In June 1939 a further order for 325 PzKpfw 38(t)s was placed. From May to August 1939, BMM (which was the new name for CKD under the German directorship) manufactured 78 PzKpfw 38(t)s. At the time of "Fall Weiss", or invasion of Poland, two of the six participating German armored divisions (1. and 3. Leichte Divisions) were equipped with Czech tanks. Of the 112 PzKpfw 35(t)s and 59 PzKpfw 38(t)s used, 77 and seven were damaged, respectively. In January 1940, another 275 PzKpfw 38(t)s were ordered.

Fifteen PzKpfw 38(t)s took part in "Weserubung Nord", or invasion of Norway. None were lost there and they were brought back quickly to take part in the invasion of France, or "Fall Gelb".

Of the ten participating Panzer Divisions, three were equipped with Czech tanks. The 6th Panzer Division had the PzKpfw 35(t), while the 7th and the 8th were equipped with the PzKpfw 38(t). In total, 357 Czech tanks participated, 229 of these being PzKpfw 38(t)s. During the French campaign 54 PzKpfw 38(t)s were damaged and 6 subsequently scrapped.

PzKpfw 38(t)s even took part in the "Unternehmen 25", which was the code name of the Yugoslavia and Greece invasion in 1941. 125 tanks of the 8th Panzer Division, or one sixth of the German tank forces in the area, were again of Czech manufacture.

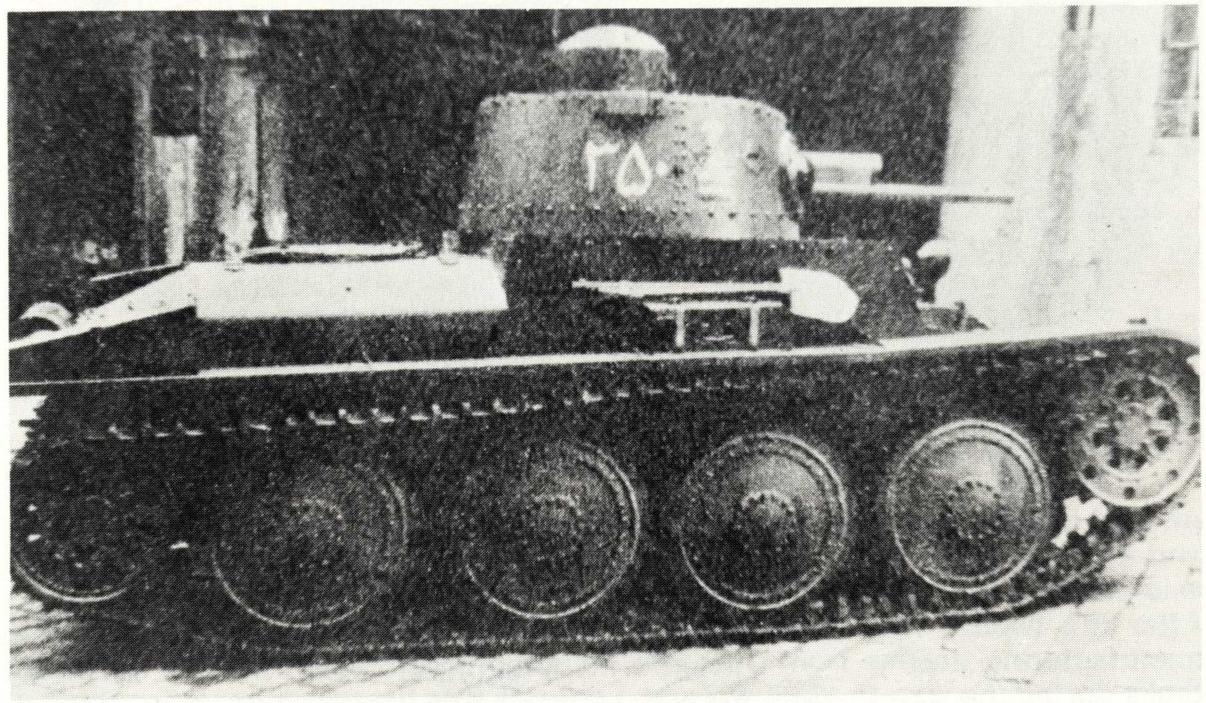
In June 1941, seventeen Panzer Divisions took part in the initial stages of "Unternehmen Barbarossa", the attack on the Soviet Union. Six of these, more than one third of the Panzer Divisions employed, mustered a total of 160 PzKpfw 35(t)s and 674 PzKpfw 38(t)s, which represented one quarter of the total strength of the German Panzer formations. But the fighting was much harder in Russia, and the opposing tanks of a vastly different quality. In the first six months of the conflict, the Germans lost a staggering 796 PzKpfw 38(t)s.

By early 1942 it was clear that these tanks were no longer suitable as main battle tanks. The Germans started passing them to their allies (Rumanians, Hungarians and Slovaks) to bolster their tank formations and diverted the production to the tank hunters and self propelled guns. Even so, the Wehrmacht still had 229 PzKpfw 38(t) tanks on its active list as late as September 1944, these being used mainly in anti-partisan duties and as parts of armoured trains.

BMM manufactured the basic tank up to June 1942, while the first variant, the Panzerjager 38, was produced from April 1942. Sixteen variants were produced in great numbers up to 1945. In April 1944, the Jagdpanzer *HETZER* started rolling off the production lines. In all, 6,450 vehicles based on the PzKpfw 38(t) chassis were manufactured by BMM and SKODA, not counting various prototypes.

In October 1944, the decision was made to base all new vehicles solely on two chasses, the Panther and the Fgst 38, while the production of all other German chasses was to be discontinued.

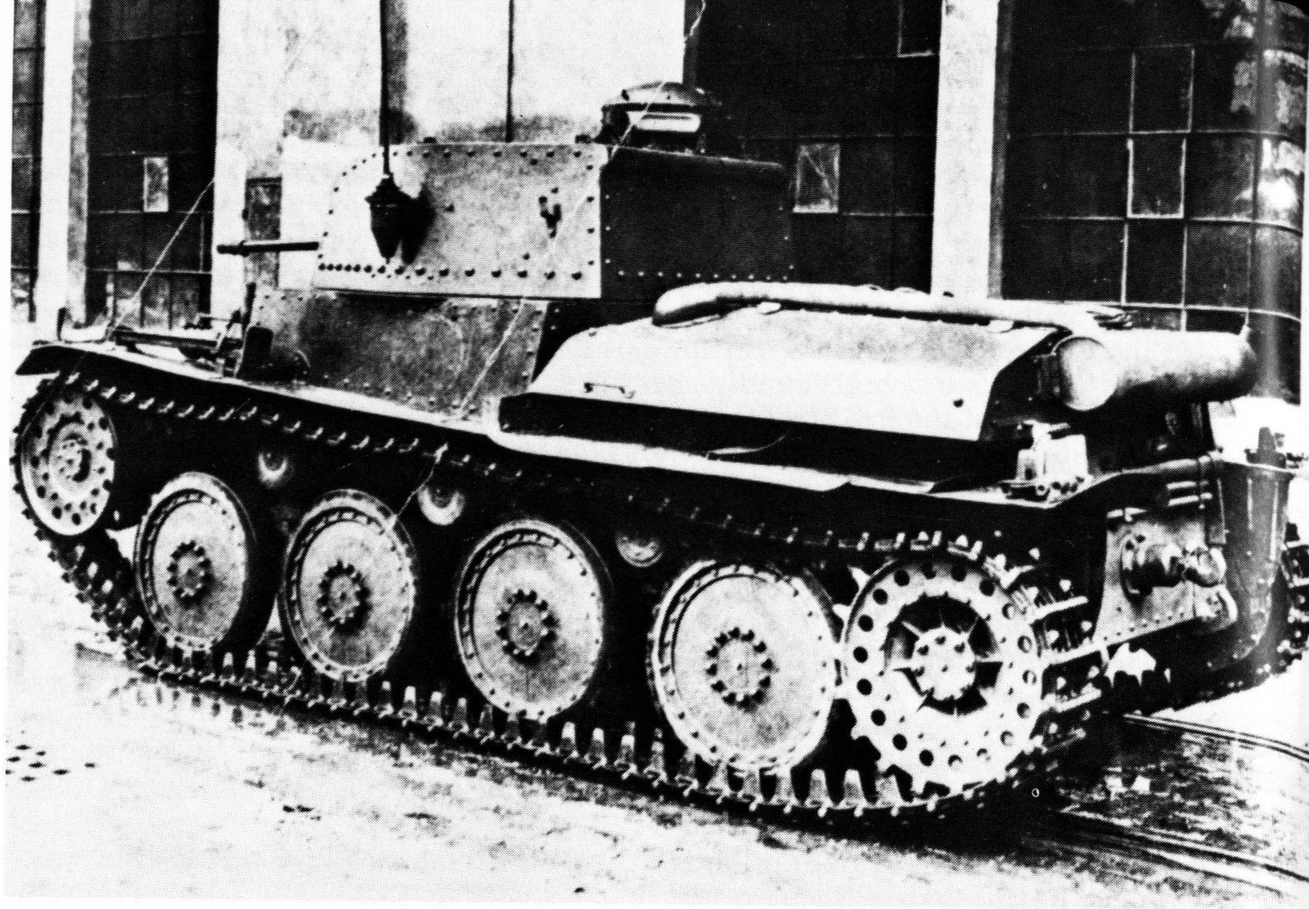
It can be safely said that the PzKpfw 38(t) was one of the outstanding designs of its time and one of the more important tanks of the Second World War. It fought on nearly all fronts with the Panzer Divisions and, in the closing stages of the war, against them.



The TNH light tank as delivered to Iran in 1937. Fifty of these tanks and fifty of the AH-IV tankettes equipped the First and Second Divisions of Imperial Iranian Ground Forces, twenty five of each type per division. These tanks were on active duty up to 1947. Note the early rounded turret. (Authors)

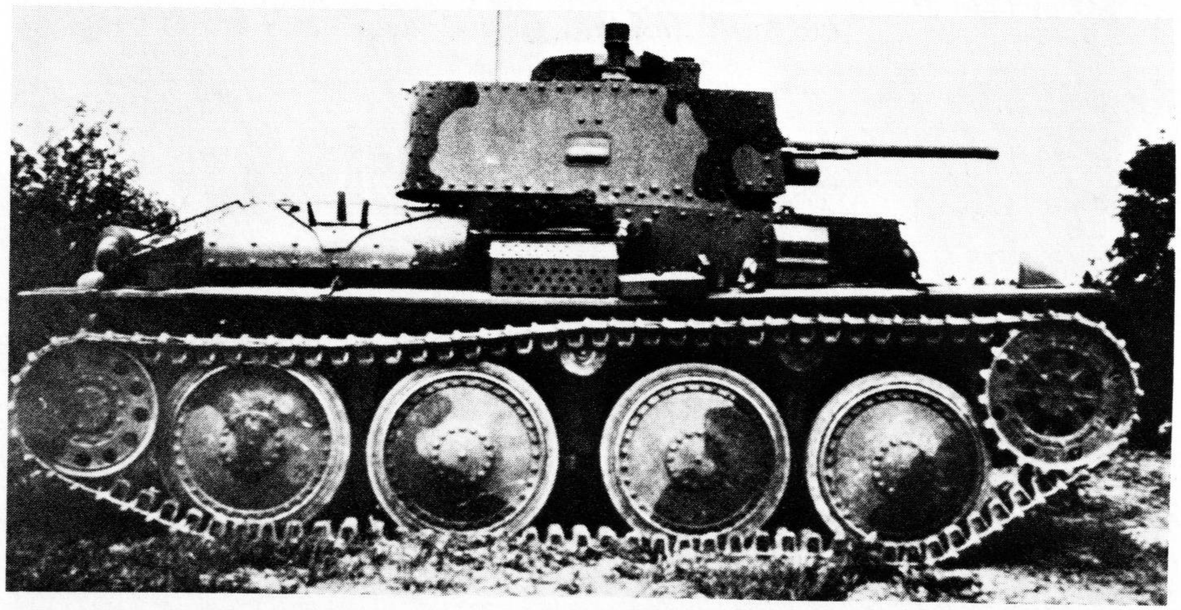
An LTP tank of the Peruvian army. Twenty four of these tanks were delivered by CKD in 1938 and soldiered on well into the fifties. (Authors)

An LTH tank of the Swiss Army. This model had a Saurer-Aarbon diesel engine and a 2.4 cm Oerlikon gun and Swiss machine guns. The early type of cupola was on the right side of the turret and carried an anti-aircraft machine gun. After the twenty-four tanks ordered were delivered, Switzerland bought a manufacturing license from CKD and manufactured a small number of these tanks during the war. In 1943, the same chassis was used as a basis for the CH 7.5 cm assault gun. (Authors)

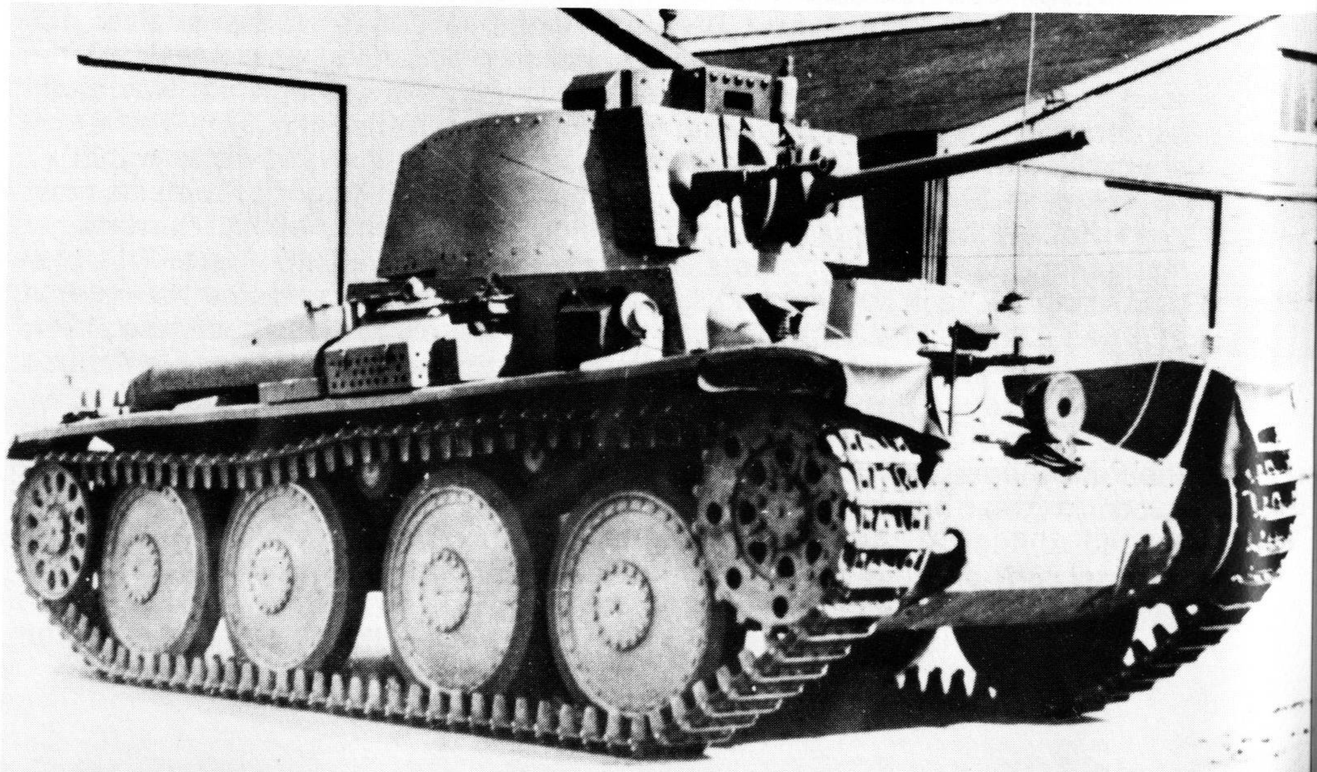


The prototype of the LTL tank, ordered by Latvia in 1938. This version had a rear-wheel drive and a 2 cm Oerlikon gun. The twenty-one vehicles ordered were never delivered. (Authors)

A Swedish Stvr m/41 on wartime maneuvers. These tanks were built in Sweden under a license from BMM from late 1942 for a total of 220 vehicles. The Swedish version had a larger turret with less rear slope, to accommodate the 3.7 cm Bofors gun, and a straight front plate. (Authors)



The LT vz.38 as sent to England for evaluation in March 1939. The English were impressed with some features, but objected to the cramped conditions and poor ride, especially in rough terrain. (Authors)



PzKpfw 38(t) ausf A

The original LT vz.38 weighed 9.4 tons. It carried the SKODA A7 tank gun and two machine guns and had a crew of three. All main construction was riveted with the exception of the top of the superstructure which was bolted. Armor was 25 mm on the front, 15 mm on sides and on the back and 10-12 mm on top.

The suspension consisted of four large rubber-tired single wheels on each side. Each wheel was mounted on a stub axle and each pair of wheels was sprung by semi-elliptical springs. A front driving sprocket with 19 teeth, a rear idler wheel, and two small return rollers carried the manganese nickel steel track with headless track pins.

The PRAGA six cylinder water cooled single carburetor engine was connected to the driving sprocket by a shaft running through the center of the fighting compartment to the PRAGA-Wilson preselector five-speed gearbox situated in the front between the driver and the radio operator. The engine developed 125 HP at 2,200 R.P.M. This allowed the tank to reach speeds up to 48 km/hour on the roads and about 20 km/hour in medium terrain. The fuel consumption was roughly 80 liters/100 km (or 4.5 miles/gallon) on the road, which gave the tank a range of 250 km.

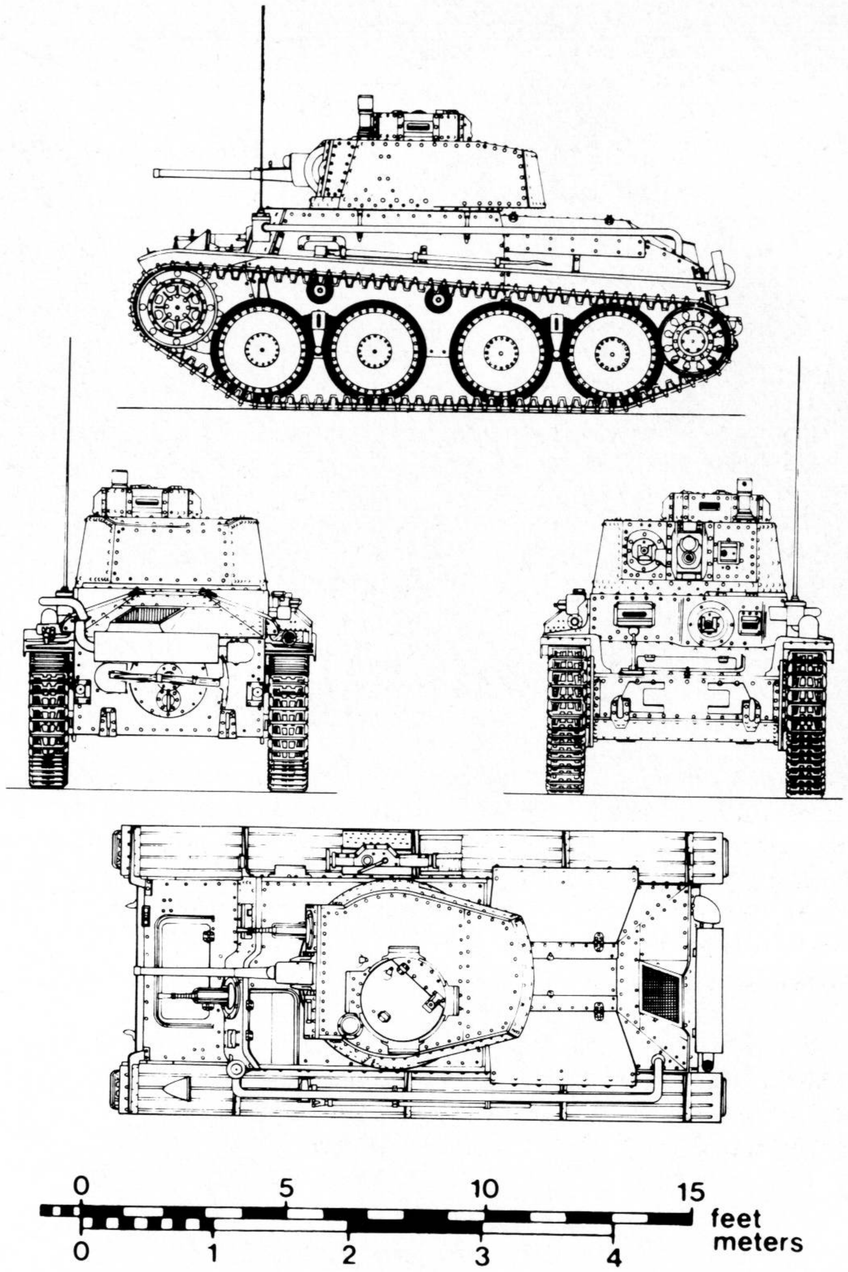
The 3.7 cm gun had a length of 47.8 calibers and a muzzle velocity of 750 m/sec. The weight of the projectile was 0.85 kg. Ninety rounds for the gun in spring-loaded magazines and 2,400 rounds for the two machine guns in belts were carried. The turret, which had no basket, was provided with hand traversing gear, which could be disengaged and the turret moved by the gunner using the gun's shoulder pad. The commander's cupola was fixed and had four periscopes.

Both ZB vz.35 and vz.37 heavy machine guns were mounted in ball mounts. The hull machine gun had a provision for being fired by the driver by a Bowden cable from one of the steering levers. The turret machine gun could be locked and traversed with the gun or operated independently. The commander/gunner aimed the gun through a coaxial telescopic sight with 2.8x magnification and elevated it using either a shoulder control or an elevating gear. Each of these was locked automatically in position when the gun was fired. The gun was semi-automatic and could fire both AP and HE projectiles.

The radio was carried on the left front side of the hull (making the position of the radio operator extremely cramped) and was provided with two aerials. A ten foot long rod aerial gave a range of 5 km, while the "battle" bar aerial on the fender was good for only about 1 km. The tank had no intercom, communications between the driver and the commander being by a system of colored lights.

There were two main exits, one through the cupola hatch and one through the hatch above the hull gunner's position. In an emergency, it was also theoretically possible to get through the door in the engine bulkhead into the engine compartment, open the louvers and escape over the rear deck.

Fire protection was both active and passive, the former in the form of fire extinguishers, the latter by special bolts holding the engine compartment's floor underneath the gasoline tanks. These were supposed to give in case of fuel explosion so that burning gasoline would shoot outside the vehicle and not into the fighting compartment.



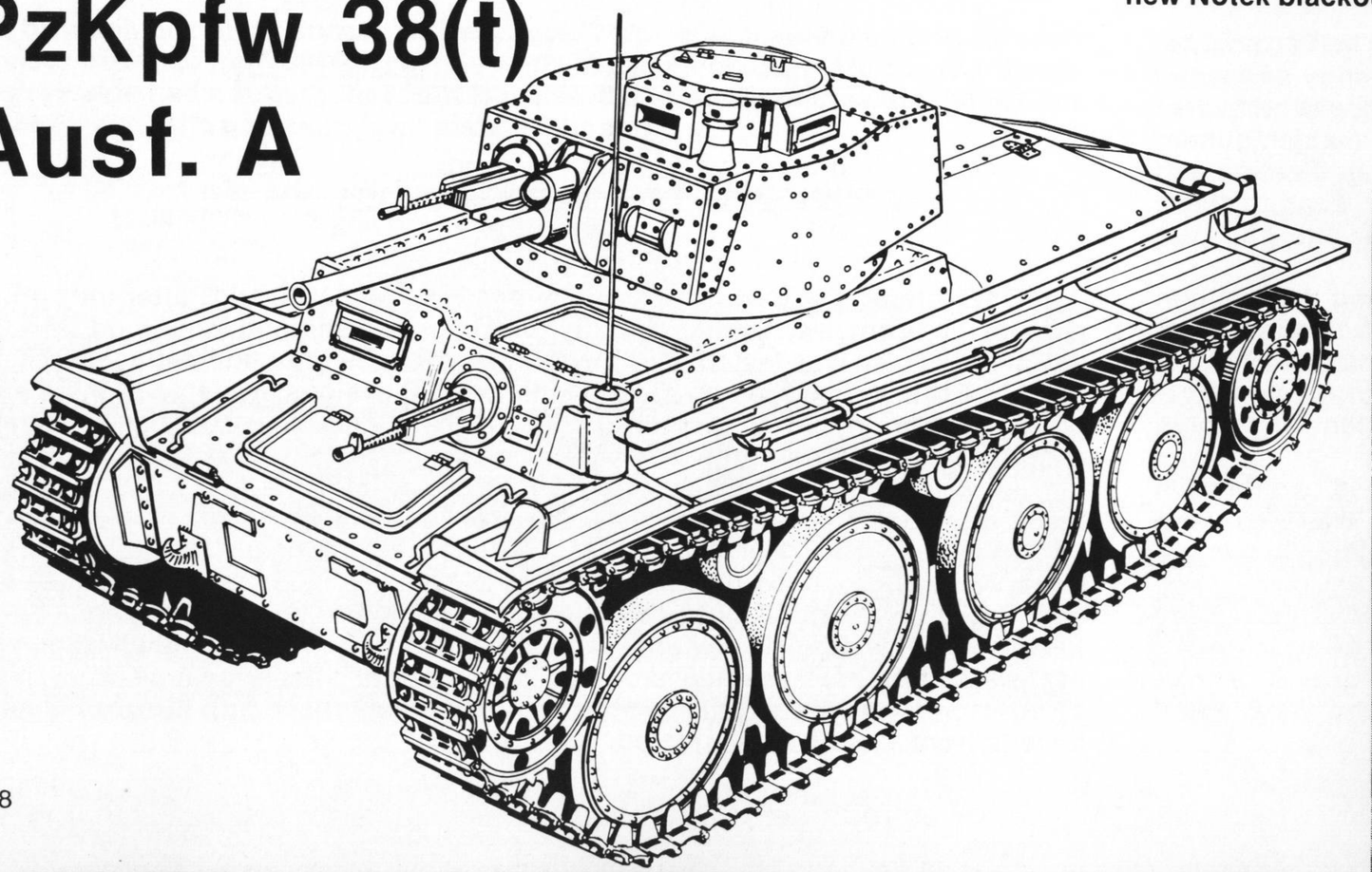
CKD offered the TNH tank to England in February 1939 and, after they got permission from the Czech Ministry of Defense, shipped one mild steel prototype, which was tested in England in March 1939. It is interesting to note that the British, who did not have too many good designs available to them at that time, were not very impressed with the TNH. The main complaints were cramped space and a rough ride.

After the German occupation of Bohemia and Moravia, the LT vz.38 was tested and favorably impressed the Germans. The existing vehicles were ordered completed. The PzKpfw 38(t) ausf A, which was practically identical to the LT vz.38, was produced from May 1939 to November 1939, totaling 150 vehicles. The Germans installed their radios and telescopes, adding their usual extensive stowage. The main change was the fourth crew member, the turret gunner. Aside from the German stowage, the external visible change was the circular bolted splash guard rings around the machine gun mounts. The driver's front plate was staggered.

A PzKpfw 38(t) of Panzer Abteilung 67, 3. leichte Division in Poland, Summer 1939. This vehicle still carries the original Czech rod and battle aerials. The small size of this ausf A is very apparent in comparison with the horse. (Author)

A PzBefW 38(t) ausf A with a Czech whip aerial and a German rod aerial, France 1940. The hull machine gun position has been deleted to make room for the additional radio equipment. Note the stub mount for the Czech tubular "battle" antenna (seen protruding from the front radio antenna mount), and the new Notek blackout light retrofitted to this tank. (Bundesarchiv)

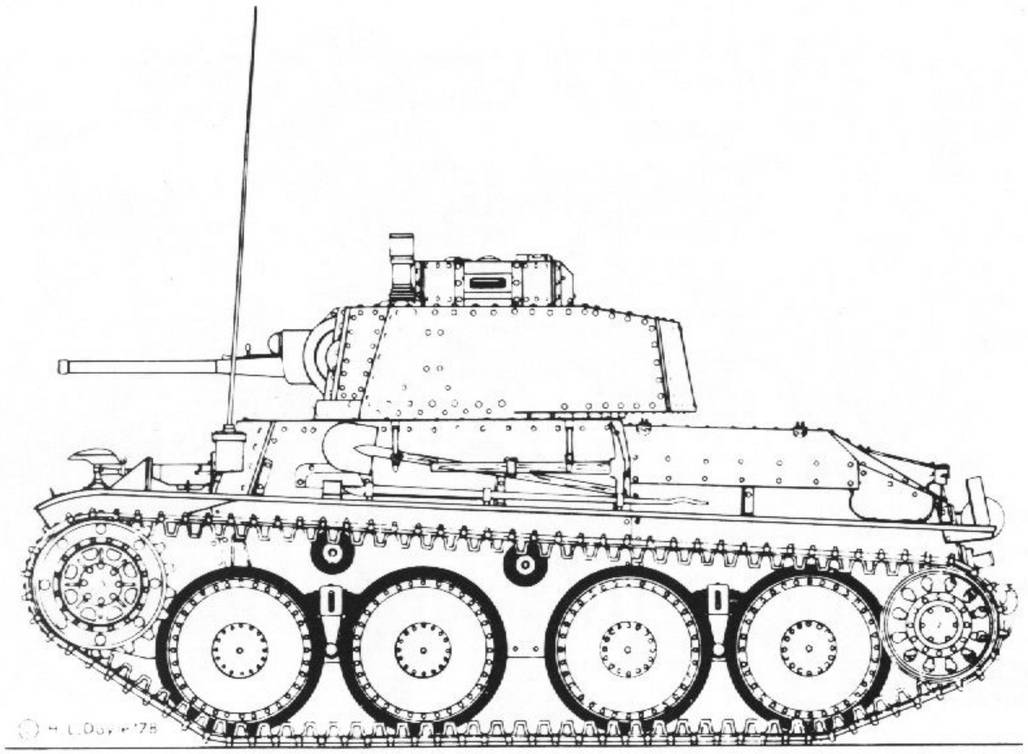
PzKpfw 38(t) Ausf. A



A PzKpfw 38(t) ausf A with original Czech aerial and machine guns removed, assigned to 7th Panzer Division, possibly prior to the French campaign. (Bundesarchiv)

PzKpfw 38(t) ausf B

The PzKpfw 38(t) ausf B was manufactured from January to May 1940. It had small changes in external stowage, Notek lights were installed, and some models were equipped with smoke projectors on the rear plate. In addition, the cover on the gun sight was slightly modified. 110 of these vehicles were produced.



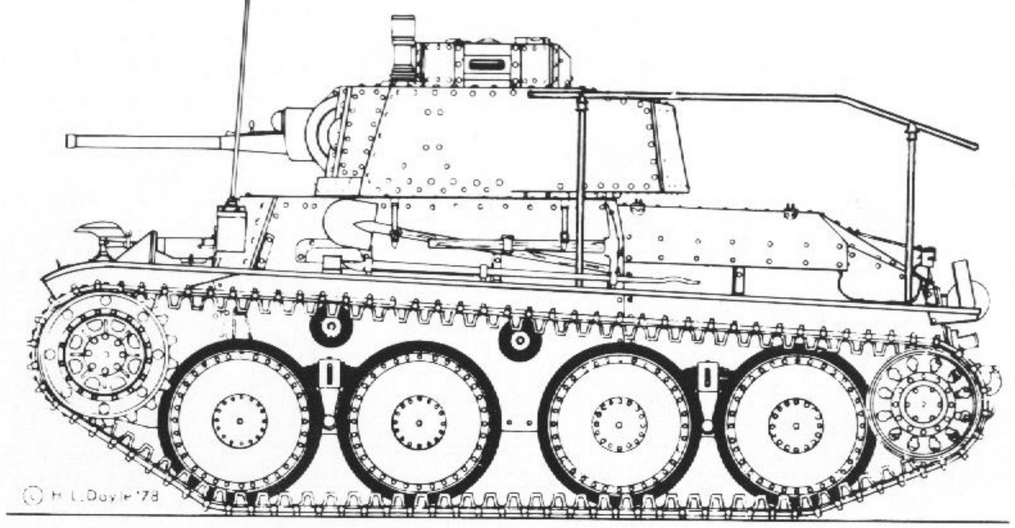
A column of PzKpfw 38(t) ausf Bs of the 16th Panzer Division on the southern sector, Eastern front, Summer 1941. On the rear plate a different type of smoke projector is carried. This is very similar to the projectors on PzKpfw III and IV tanks of the same period. (Author)

PzKpfw 38(t) ausf B on eastern front, Summer 1941. Both front vehicles carry rubber tires for the main wheels on the front plate. This was unusual, because normally the whole wheel was carried, usually on the engine deck. (Bundesarchiv)

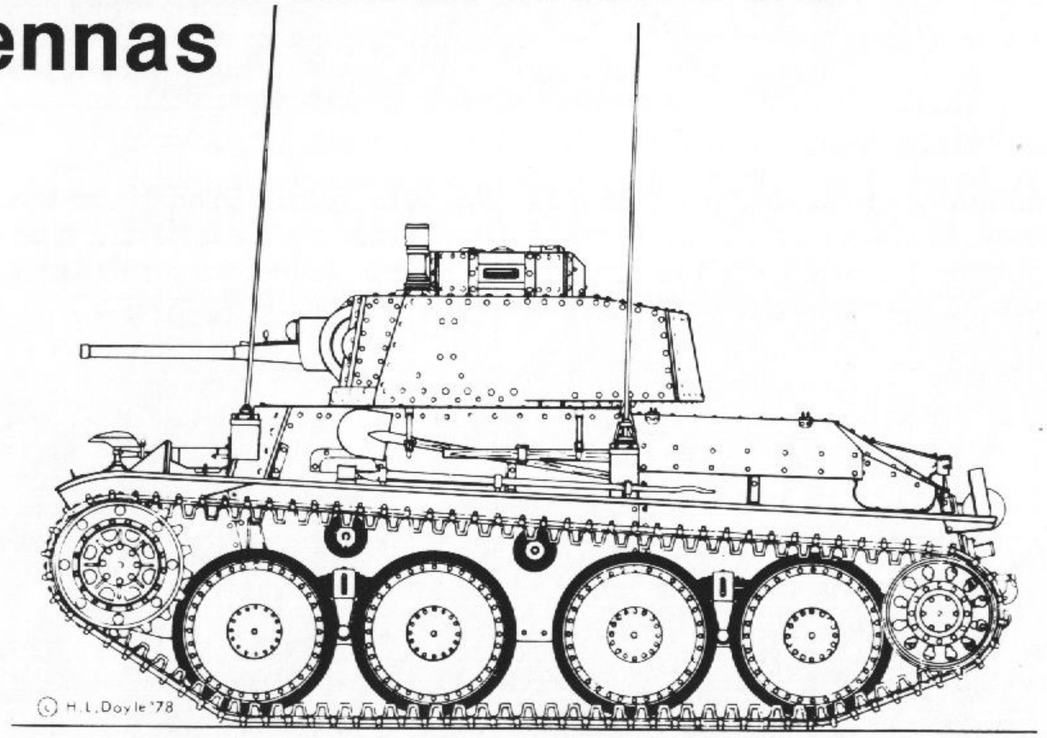
A column of the 7th Panzer Division in Russia. These are ausf B vehicles. Note the original low position of the muffler. Again, lots of extra stowage are carried on the engine deck. There was never enough space to hold all the paraphernalia crews collected. (Bundesarchiv)

A Befehlspanzer 38(t) ausf B (command tank) with the typical frame aerial, France 1940. Each Panzer Division had seven PzBefW 38(t)s. The wood timbers were used in crossing obstacles such as ditches or streams. (Author)

Command tank with frame antenna



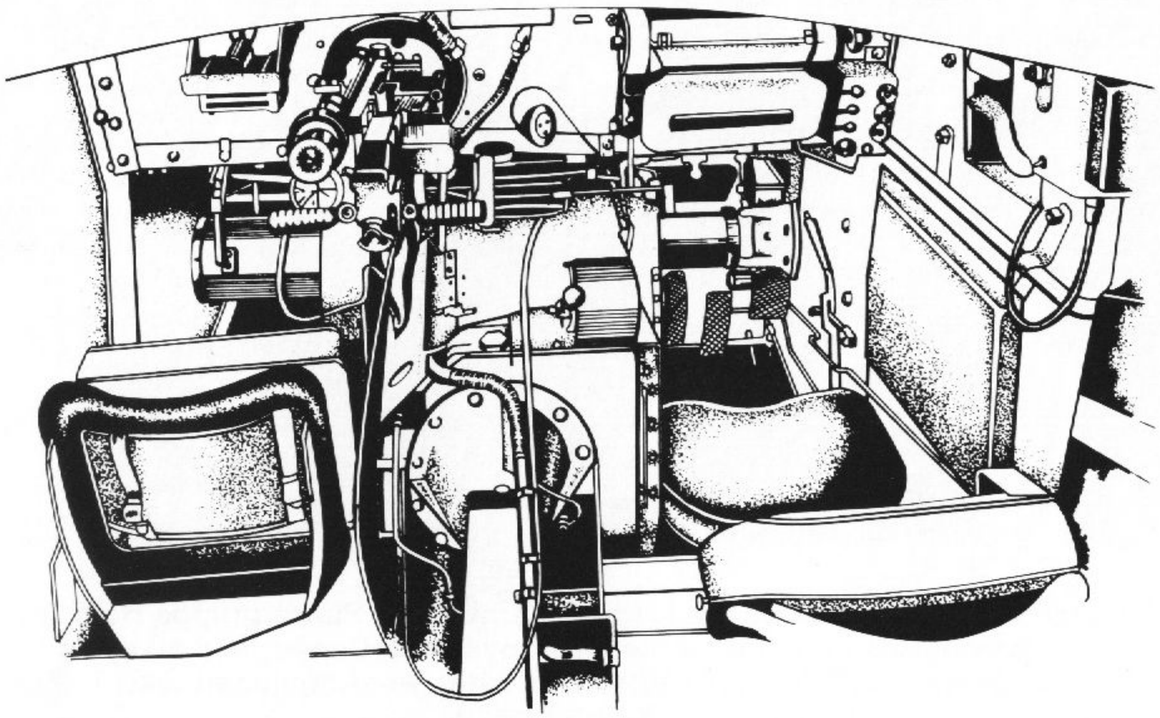
Command tank with rod antennas



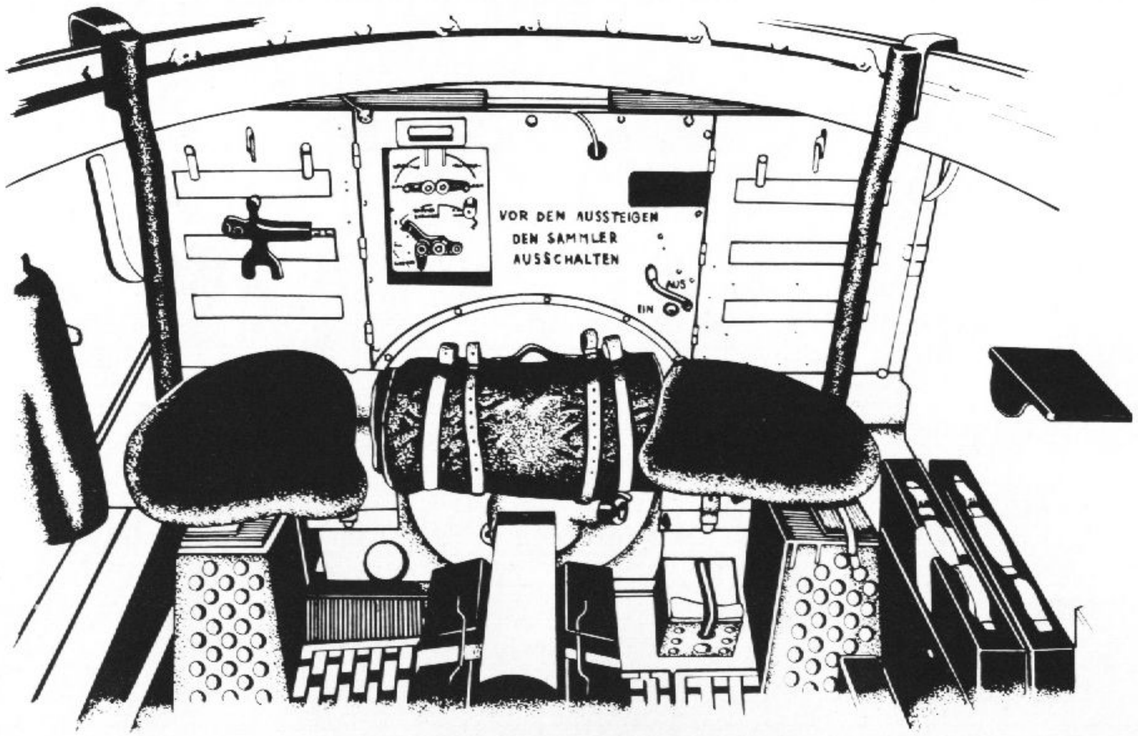
A PzKpfw 38(t) ausf B of the 8th Panzer Division, northern sector of the Eastern front, Summer 1941. The plated-over bow MG position indicates that this is a command vehicle. The second rod antenna is probably hidden behind the crew. (Bundesarchiv)

PzKpfw 38(t) ausf C

The PzKpfw 38(t) ausf C, also totaling 110 vehicles, was produced from May to August 1940. Changes included a splash guard for the turret ring, a German radio aerial, and the exhaust muffler moved to a higher position on the rear plate.

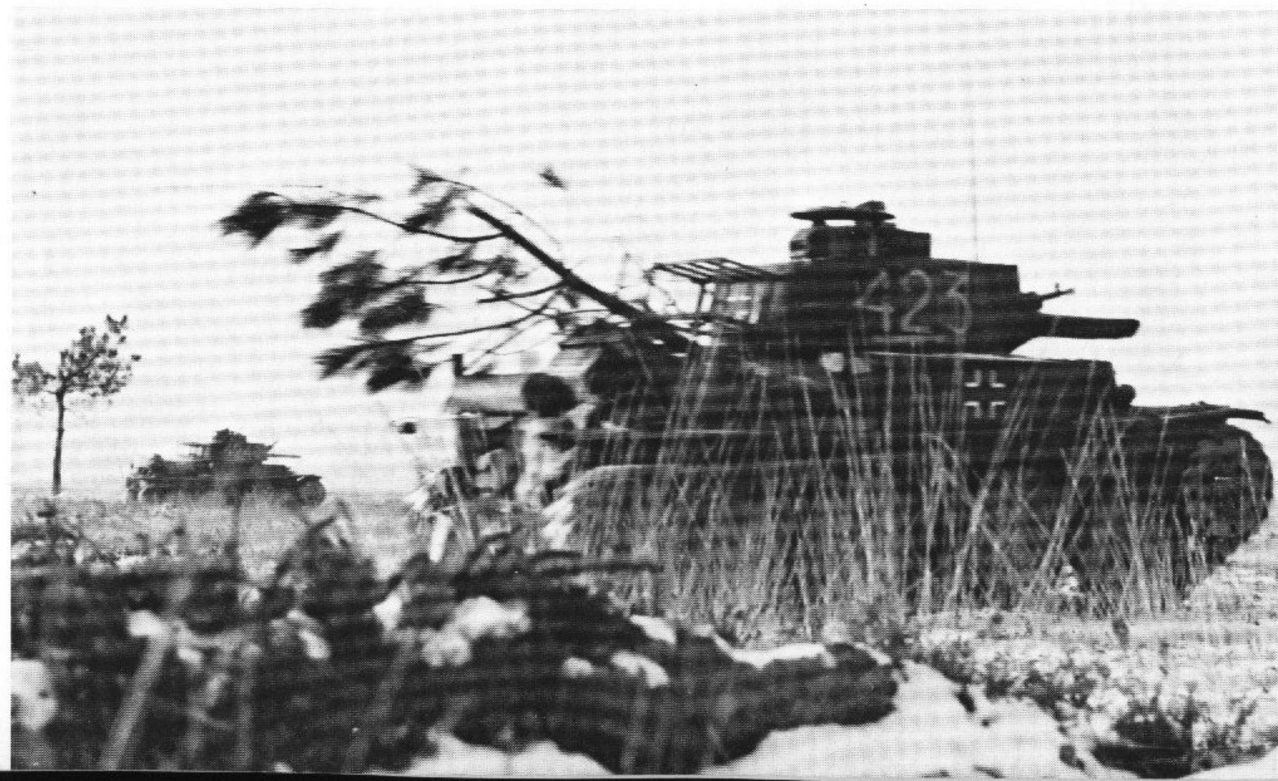


Hull interior views

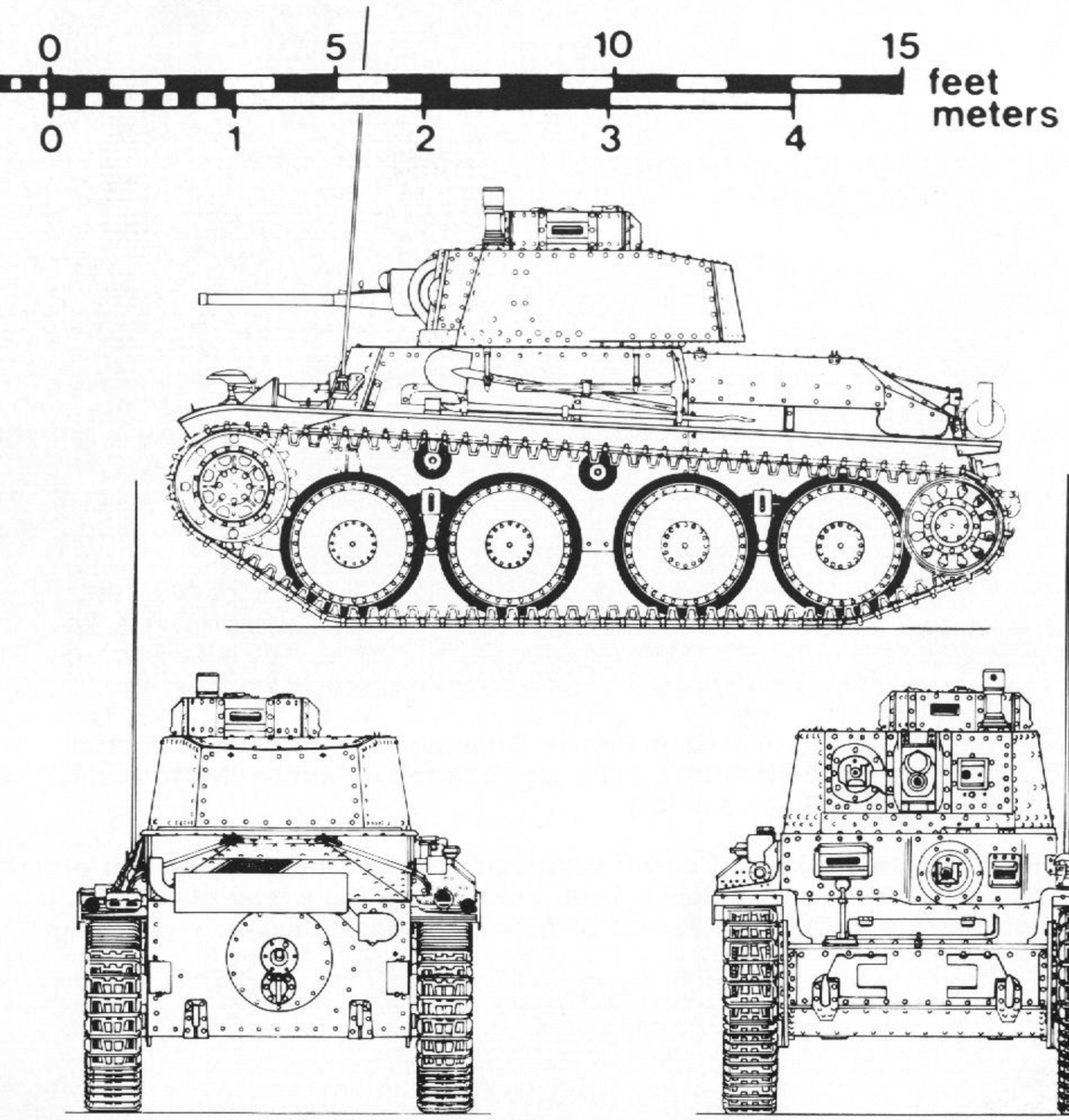


A column of PzKpfw 38(t) ausf Cs in Russia, Summer 1941. This tank carries an unditching beam on the left fender, extra stowage and a German flag to assist in aerial recognition. (Bundesarchiv)

A couple of PzKpfw 38(t) ausf Cs with additional stowage racks on the rear of the turrets and on the engine decks, seen in Russia in the winter of 1941-42. These vehicles are in the 22nd Panzer Division. (Bundesarchiv)



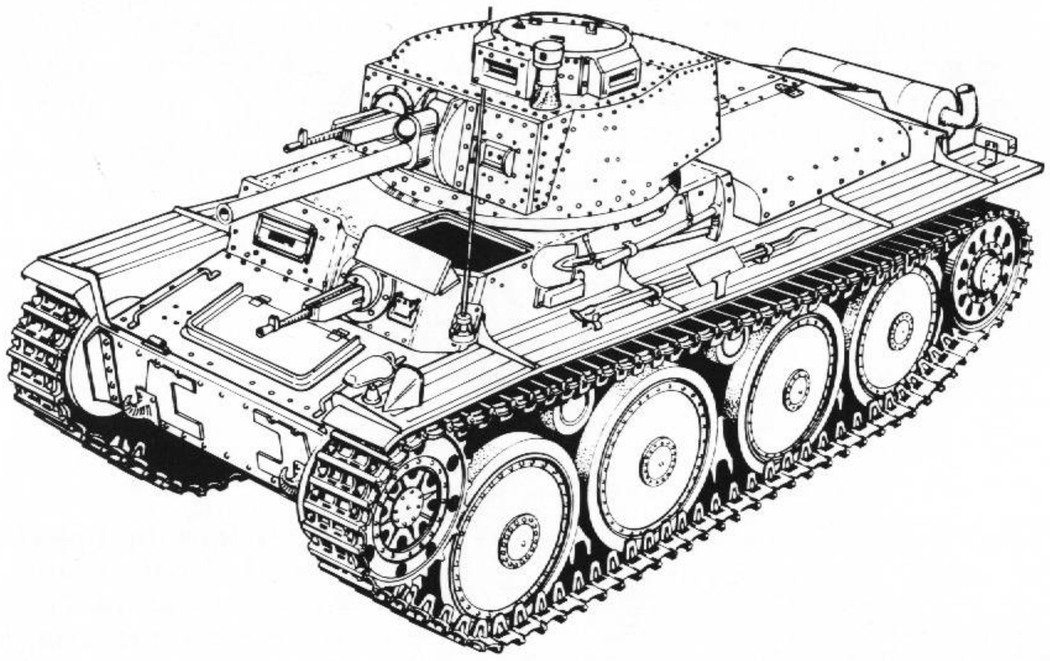
PzKpfw 38(t) ausf C



Ukrainian peasants welcome the leading elements of Panzergruppe Hoth. PzG Hoth was part of Heeresgruppe Mitte, or Army Group Center, and all of its four Panzer Divisions, the 7th, 12th, 19th, and 20th, were equipped with PzKpfw 38(t) tanks. This tank is an ausf C. (Bundesarchiv)

A PzKpfw 38(t) ausf C, seen in the early spring of 1942 in Russia. Note the remaining white camouflage. The coating of mud on the hull and chassis has completely covered the original dark gray paint. (Bundesarchiv)

PzKpfw 38(t) ausf C



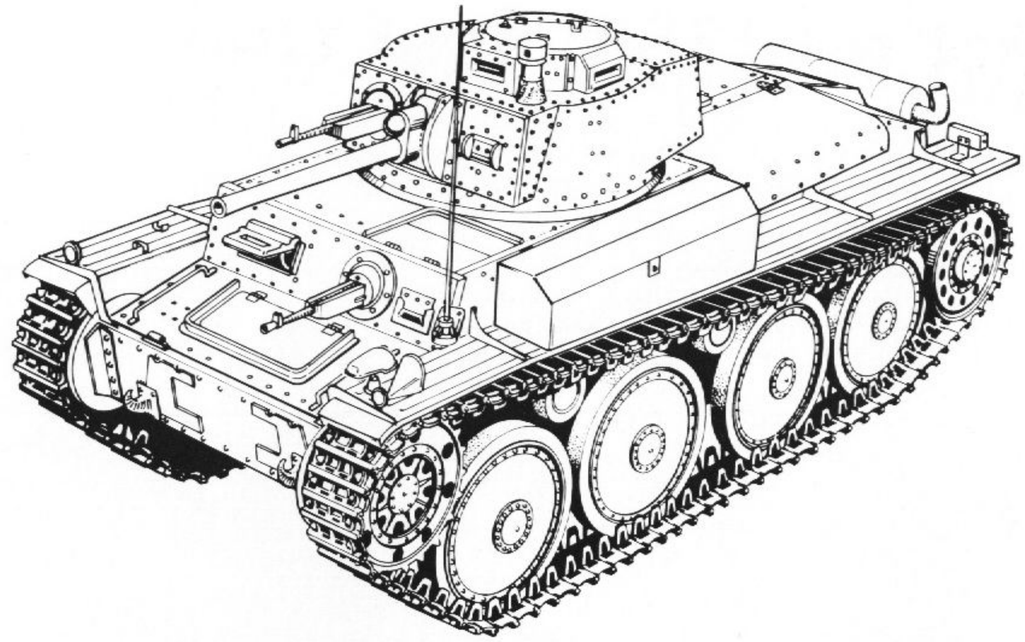
The conspicuous frame antennas on command tanks, like this PzKpfw 38(t) ausf C, marked the vehicles for enemy artillery observers, and later in the war, additional rod and "star" antennas replaced these tubular frames. (Bundesarchiv)

When their front-line usefulness was ended, many PzKpfw 38(t)s found a "new life" on armored trains. Used mainly for anti-partisan duties, they proved quite effective, not only increasing the fire-power of the trains, but also leading counter-attacks for some distance from the tracks. They rode on special armored flatcars with ramps so that they could quickly get out and off the tracks. The Wehrmacht still had 229 PzKpfw 38(t)s on its active list in September 1944. (Bundesarchiv)

A PzBefW 38(t) ausf C, France 1940. The command and recon vehicles carried the very conspicuous frame aerial for long-range communications. The command tanks carried additional radio equipment and usually had their bow machine gun deleted and the opening plated over to make more room in the hull. (Bundesarchiv)

PzKpfw 38(t) ausf D

The PzKpfw 38(t) ausf D was produced between September and November 1940, and 105 examples were completed. Though there are no surviving detailed records, it appears that the ausf D was an interim model, perhaps reflecting the first assessments of combat reports from Poland and France. The ausf D was the first model to have a straight front plate, the driver's plate being moved forward in line with the original extended radio operator's armor. The front plate was apparently still 30mm, and the original driver's visor and R.O.'s vision device were fitted. The turret was similar to that of the ausf C. The photograph below may be a very early ausf E using ausf D vision ports in the 50mm front plate, but its appearance is virtually identical to the ausf D. It is possible that late-production ausf Ds had heavier frontal armor on the hull and turret, but more likely that early ausf Es with heavier armor used old ausf A-D vision devices and fittings until the later parts were available.

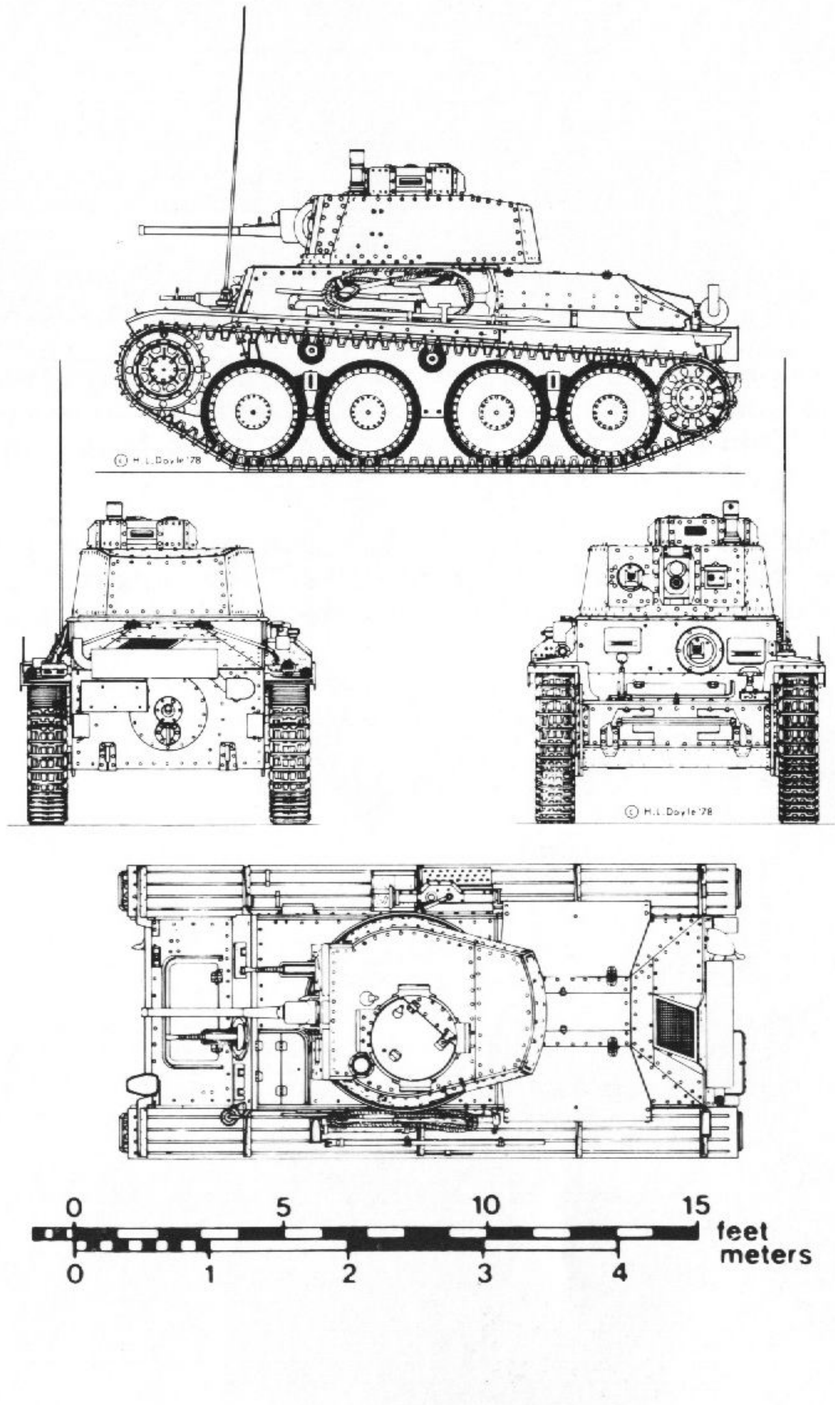


The straight front plate and original front visors on these tanks of the 7th Panzer Division in Russia, 1941 identify them probably as PzKpfw 38(t) ausf Ds. General Rommel commanded the 7th Panzer Division during the French campaign, but in 1941 General von Funck took over. (Author)

PzKpfw 38(t) ausf E/F

The PzKpfw 38(t) ausf E was made from November 1940 to May 1941. 275 tanks were delivered. The driver's front plate and turret front were uparmored to 50 mm. This series is easily recognized by the straight driver's plate, bolted armor on the turret front, removal of the splash ring over the turret MG, and (usually) a large stowage box fitted on the left fender. Aside from 25 + 25 mm frontal armor, the side armor was increased to 15 + 15 mm, and the driver and the hull gunner were provided with new visors.

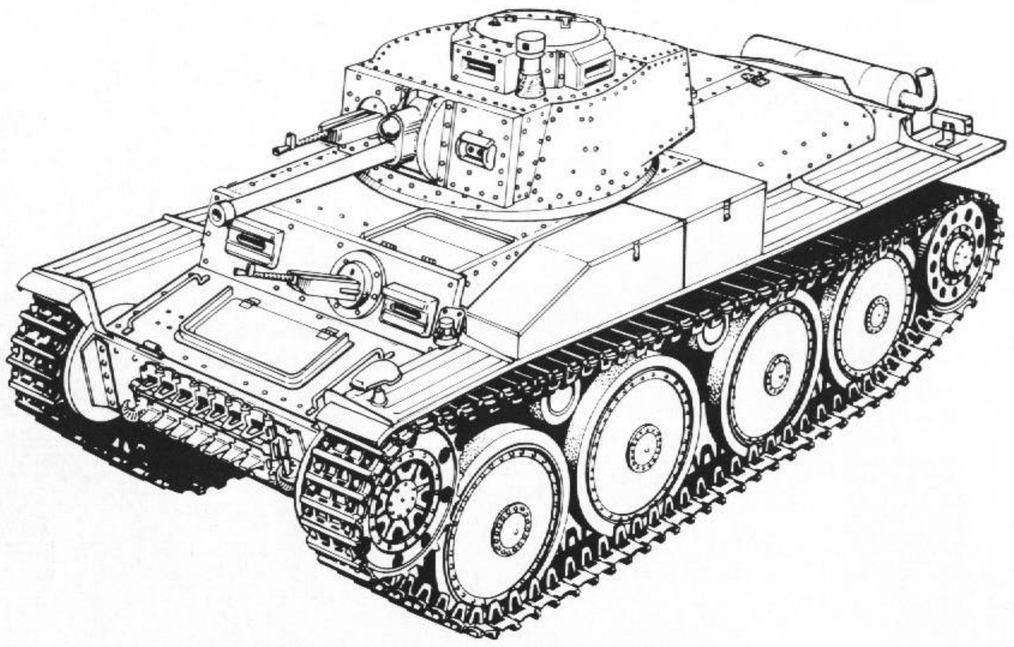
The PzKpfw 38(t) ausf F was manufactured concurrently with the ausf S between May and October 1941. The 250 ausf Fs were similar to the ausf Es with the 50 mm frontal and 30 mm side armor.



A PzKpfw 38(t) ausf E of the 7th Panzer Division, Russia 1941. Note the driver's straight plate, German type aerial and a Notek light. (Doyle via author)

A PzKpfw 38(t) ausf E of the 8th Panzer Division during the Balkans campaign in Summer 1941. Called "Unternehmen 25", the operation used six Panzer Divisions of which only the 8th was equipped with Czech tanks. (Author)

PzKpfw 38(t) ausf E/F



The 30 mm side armor could not take hits like this. In Russia it became quickly apparent that lightly armored tanks with a small caliber gun, like this ausf F command tank, were useless as main battle tanks. (Bundesarchiv)

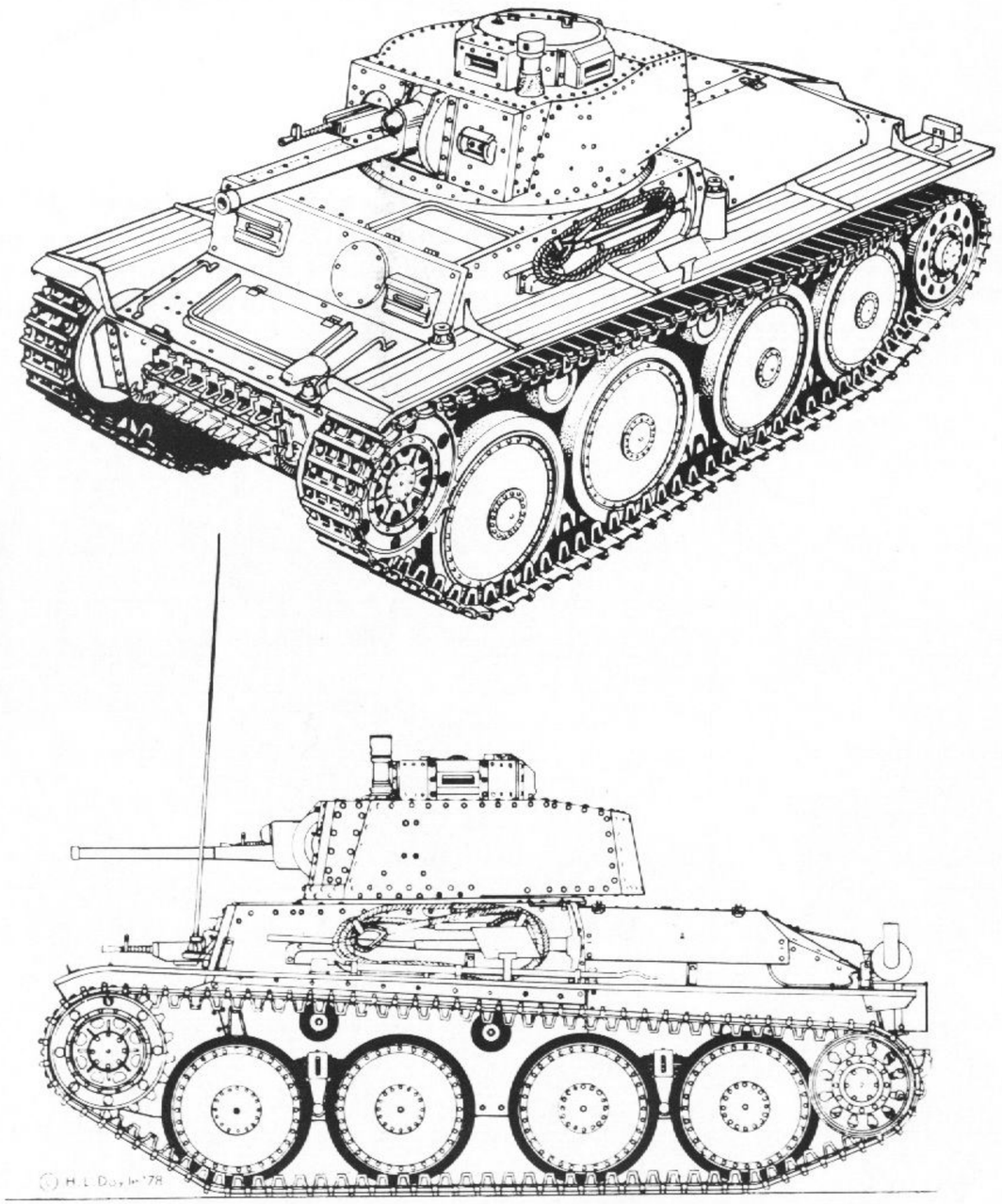
Note the Slovak recognition shield on the turret of this knocked-out tank. This picture is from the time of the Slovak uprising against the Germans in August 1944. This was the first time the CKD tanks fought against the Germans. (Authors)

Rear view of PzKpfw 38(t) ausf E or F V-3080. During the uprising, the Slovak insurgents had over 20 PzKpfw 38(t)s available. They were no match for the PzKpfw IVs, Panthers and *HETZERs*, and were quickly destroyed. (Authors)

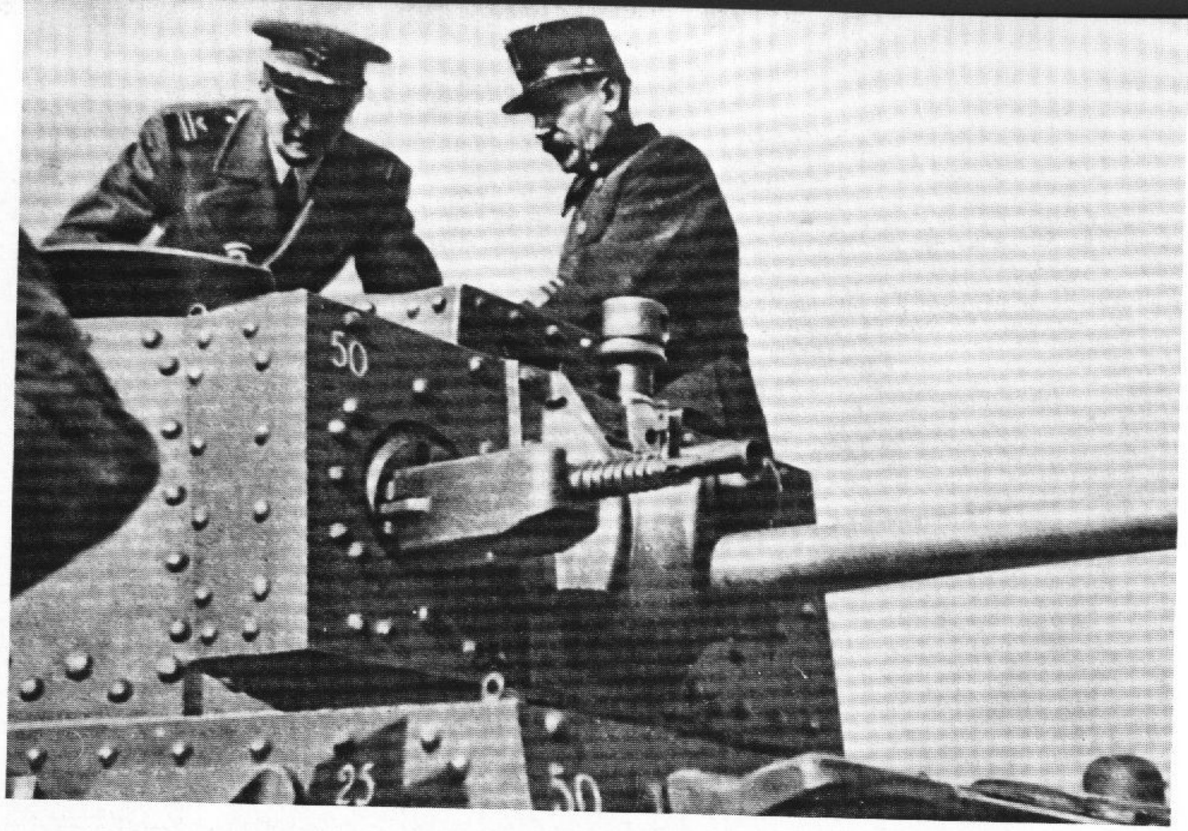
PzKpfw 38(t) ausf G

The PzKpfw 38(t) ausf G was the last version of the turreted tank. 500 chassis were built, but only 324 were completed as PzKpfw 38(t)s, between October 1941 and July 1942.

Ausf G command tank



Rare damage on this PzBefW 38(t) ausf G. Note the long range aerial, front MG position plated over, and a good detailed view of the Notek light. The gun barrel may have been hit by an enemy projectile. (Bundesarchiv)

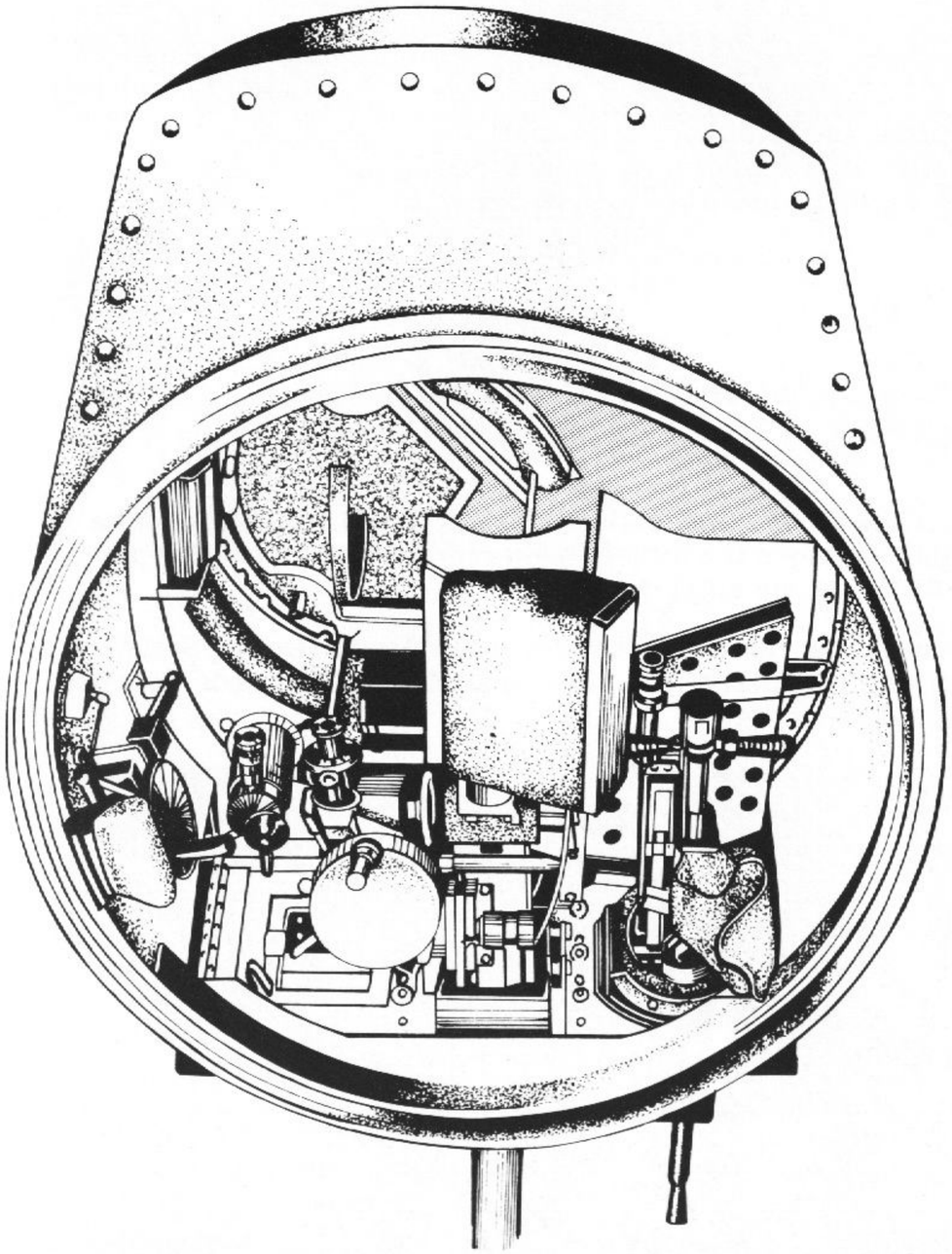


Hungarian vice-regent Istvar Horty examines a new PzKpfw 38(t) ausf G delivered by Germany. Hungary received 102 tanks of this type in June 1942 and used them up to the end of the war. (Author)

A column of Rumanian PzKpfw 38(t)s near Poltava, Russia, Summer 1943. The Rumanian army was originally equipped with SKODA LT vz.35 tanks which they bought before the war. When the attrition on the Eastern front necessitated replacements, the Wehrmacht re-equipped the First Royal Armored Division with 50 PzKpfw 38(t)s in early 1943. (Author)

The upkeep of the PzKpfw 38(t) was quite simple and usually did not take more than 30 minutes per day. Here the crew is lubricating the main wheel bearings. Each wheel had only one center nipple. (Bundesarchiv)

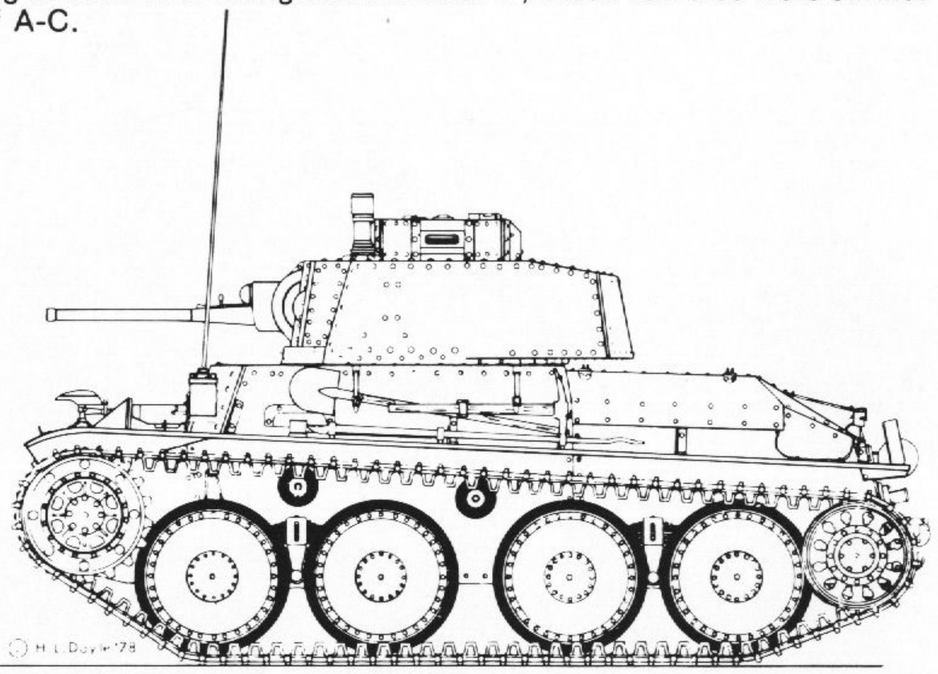
Turret interior



PzKpfw 38(t) turrets were used sometimes as bunkers for protection of beaches or airfields. This picture is from Corsica. It is interesting that the Swedish army is still using the Stvr m/41 turrets in the same way for airfield protection up to the present time. (Author)

PzKpfw 38(t) ausf S

In 1939 Sweden had ordered 90 tanks from BMM, but in 1940 work on their manufacture was suspended to allow completion of the Wehrmacht orders. Later that year the Germans decided to confiscate these tanks for their own use, but at the same time they opened negotiations to allow Sweden to build these tanks under license. The 90 vehicles, designated PzKpfw 38(t) ausf S, were to be assembled in February 1940, but due to difficulties in converting them for German use, the work did not take place until May to September. Despite being built in 1941 alongside the ausf F, these vehicles were similar to the old ausf A-C.



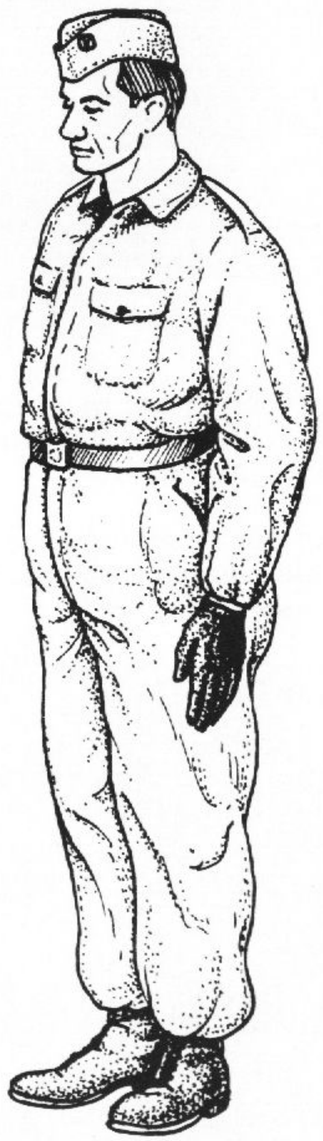
A line of PzKpfw 38(t) ausf Ss of the Slovak State. The Slovakian Army's Fast Division was equipped with LT vz.35, LT vz.40 and PzKpfw 38(t) tanks in time to participate in the operation Barbarossa. (Doyle via author)

The Slovak Army tanks carried their serial numbers on the front plate (white on black) and national marking in the form of a small white-red-blue shield on the sides of the turret. (Doyle via author)

The Fast Division of the Slovak Army was part of the Armee Gruppe Sud (Army Group South) and fought as part of the 14th Panzer Corps. Its full complement was 114 tanks. (Doyle via author)

The too familiar retreat scene, roads littered with abandoned and destroyed vehicles. The Germans crushed the uprising in two months. By October 27 it was all over, the survivors retreating into the Tatra mountains and reverting to partisan war. (Doyle via author)

Crew uniform (Slovakia)



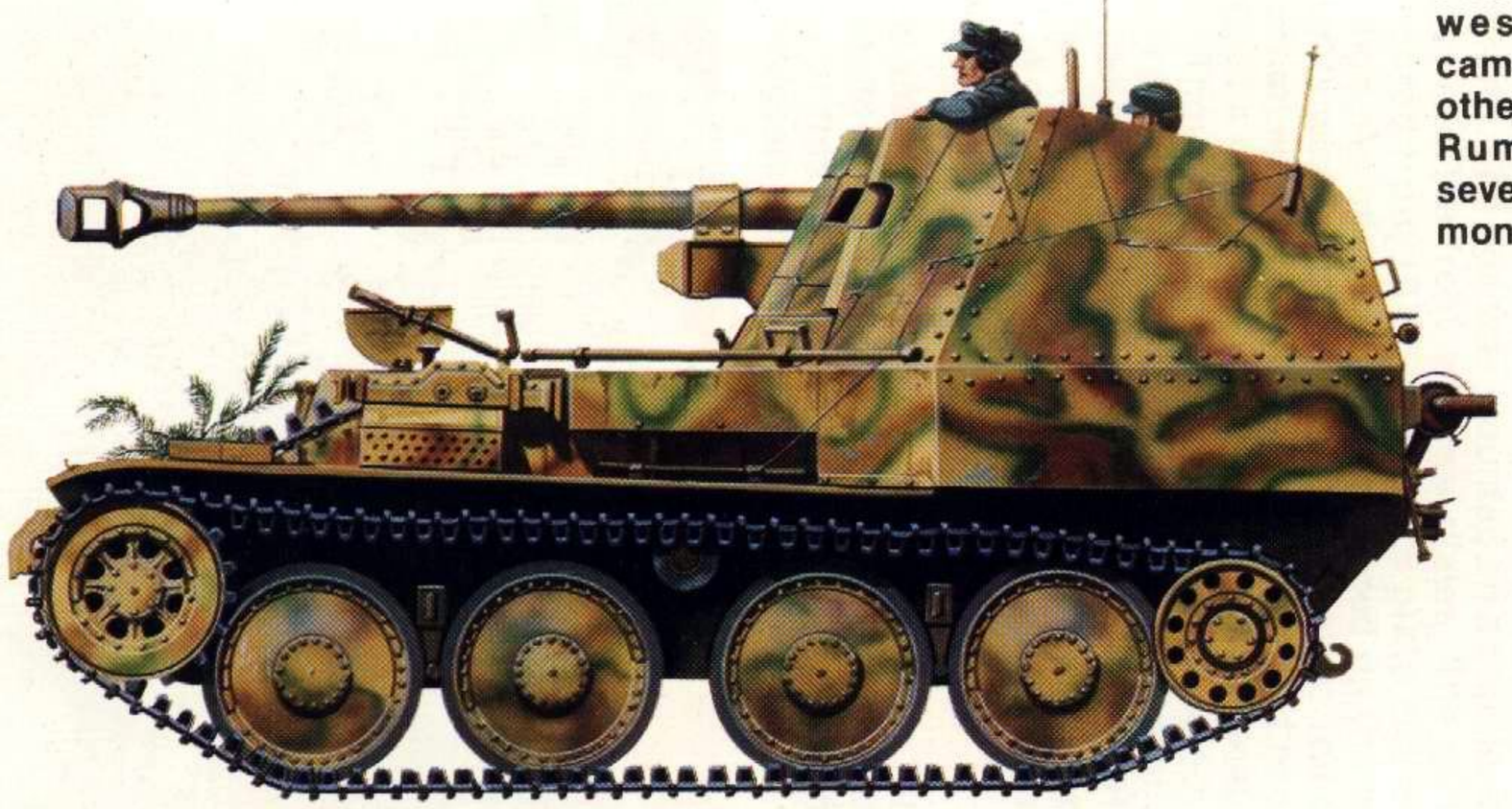
One of the original Slovak PzKpfw 38(t) ausf Ss serves as a memorial in the center of the uprising, Banska Bystrica. This vehicle is a runner and is still being paraded during the anniversary of the uprising every year. (Author)

PzKpfw 38(t) ausf. A, 3rd leichte Division, Poland, 1939.

PzKpfw 38(t) ausf. C, 22nd Panzer Division, France, winter 1940. This vehicle was engaged in winter training exercises, but the same markings were used in the early Russian campaign.

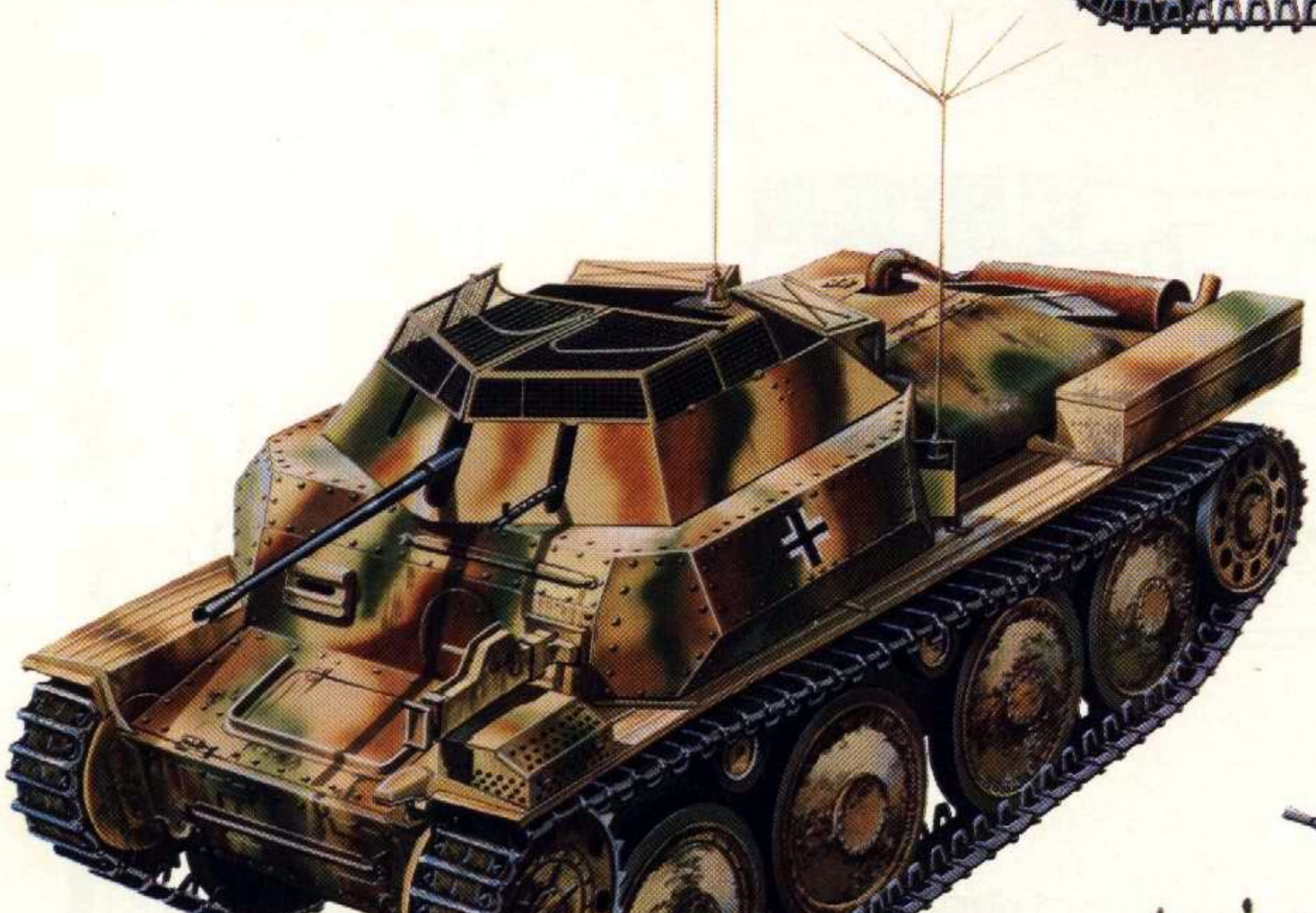
PzJag 38(t), SdKfz 139, Russian front, early summer 1943.

PzJag 38(t), SdKfz 138 ausf. H., Russian front, 1943.



PzJag 38(t), SdKfz 138 ausf. M, western front, 1944. The camouflage was also seen on other vehicles in the west and in Rumania. Though used on several fronts, it was not common.

Flammpanzer 38(t) *HETZER*, **Ardennes offensive, winter 1944.**

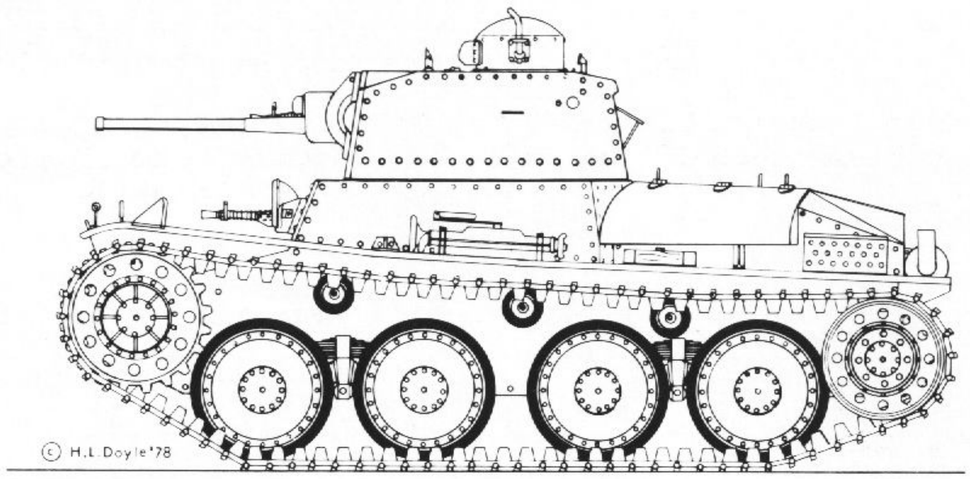


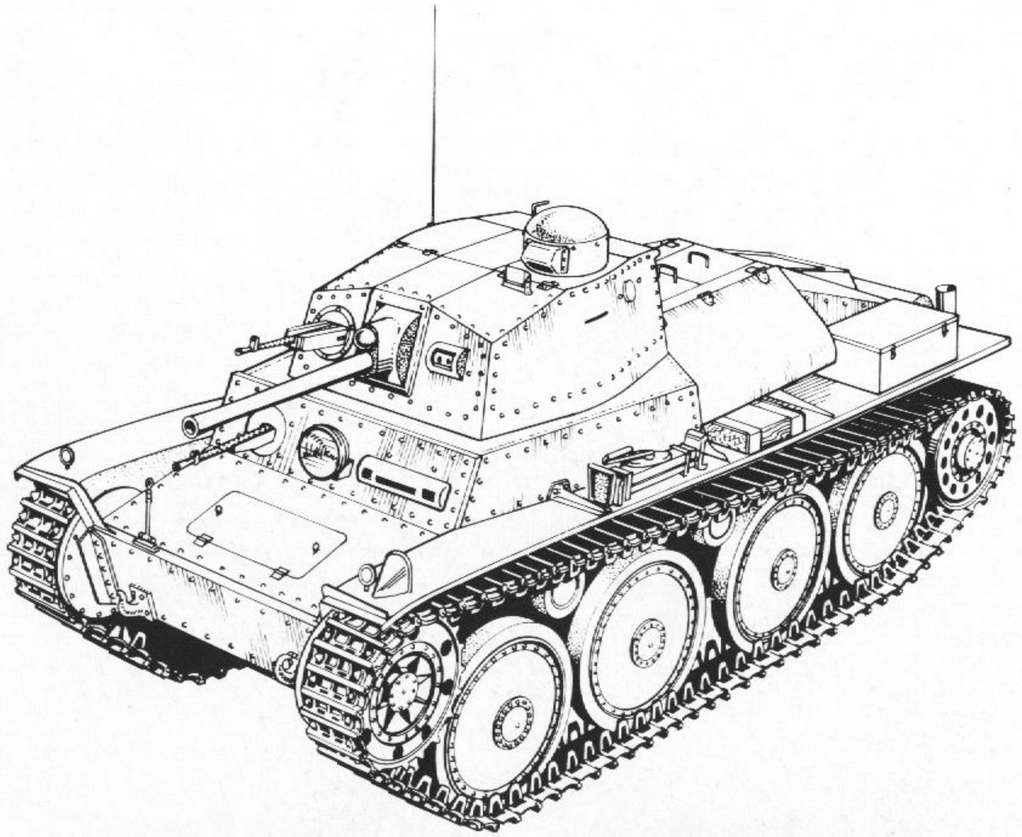
Aufklarungspanzer 38(t), France 1944. This vehicle was not marked but probably came from the 2nd or 116th Panzer Division.

Flakpanzer 38(t), SdKfz 140, France 1944. Many of these vehicles used foilage for additional concealment from Allied aircraft.

LT vz. 40

Aside from the 1,414 PzKpfw 38(t)s built for the Wehrmacht (1,411 plus three prototypes), BMM supplied the Slovak State in 1940 with 21 vehicles of the LT vz.40 type, which was basically the lightened and cheaper version of the LT vz.38. It had the same engine and gun, but only 25 mm of armor and a differently shaped turret with a one-piece rounded cupola.





The LT vz.40, a lighter and cheaper version of the LT vz.38, was manufactured for the Slovak Army by BMM in 1940. Note the modified turret, cast cupola in the turret roof and three return rollers. (Authors)

Twenty-one LT vz.40 vehicles were delivered, most as gun tanks with a few command vehicles. This Slovak vehicle is seen abandoned, probably knocked out. Note the shield on the turret side. (Authors)

TNH n.A. Recon Tank

In 1942, fifteen tanks of the TNH n. A. type were entered for the OKW trials for a reconnaissance tank. With a 3.7cm gun, 35 mm armor, and a new V-8 engine of 250 HP, this tank attained speeds over 60 km/hour.

Some of the PzKpfw 38(t) chassis were modified for driver training. To save precious gasoline, they were equipped with wood burning gas generators, which were quite common on civilian trucks in Germany during the war.

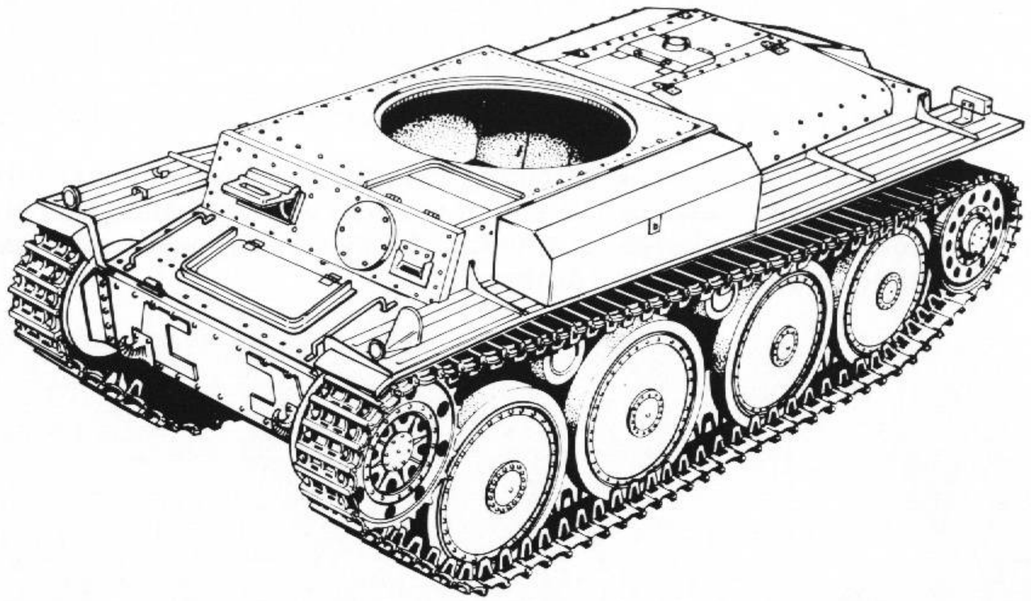
A grand total of 3,590 PzKpfw 38(t)s and of the described modifications were built by BMM before production was terminated in September 1944.

The PzKpfw 38(t)n.A. "neuer Art"-new model), BMM's entry for OKW trials for a recon tank in 1942. Welded construction, German visors, different turret, and sand shields clearly distinguished this type from the normal PzKpfw 38(t). With a weight of 14.8 tons, the tank attained a speed of 62 km/hour. Only 15 were built. (Authors)

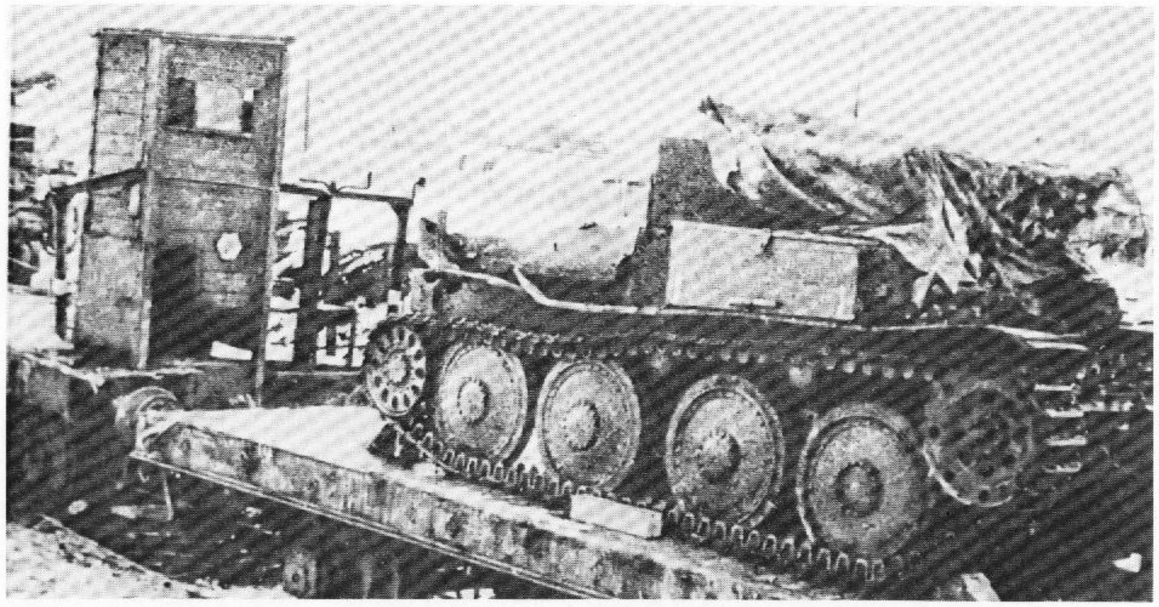
Schulfahrerwanne, or "tub for driver's training", was one of the many tasks the 38(t) chassis was used for. Towards the end of the war, when gasoline was at a premium and could not be wasted for training, these vehicles were equipped with wood burning gas generators. (Authors)

Munitionsfahrzeug 38(t)

102 ammunition vehicles for the 15 cm sIG were built on the ausf M chassis between January and May 1944. Many more obsolete tank chassis were also converted to this task, mainly to carry ammunition for the self-propelled artillery formations. With the turret and even the front MG removed, they weighed only 8 tons. The planned ratio was two Munitionspanzer for every 6 Grille.



The Munitionsfahrzeug 38(t), or munitions carrier, was a logical and needed development. The self-propelled artillery needed vehicles with the same cross-country capabilities to keep them supplied, and as the guns were usually mounted on the 38(t) chassis, it was only logical that the same chassis was used for the supply vehicles. (Doyle via author)



With the turret removed, the Munitionsfahrzeug carried only a two-man crew. This vehicle was photographed in the winter of 1942, near Stalingrad. (Bundesarchiv)

On the Eastern front, 1944, and still soldiering on, these vehicles were used to supply tank formations as well. The enterprising crew of this vehicle has used an old windshield and canvas roof from a car to improve their vehicle. (Bundesarchiv)

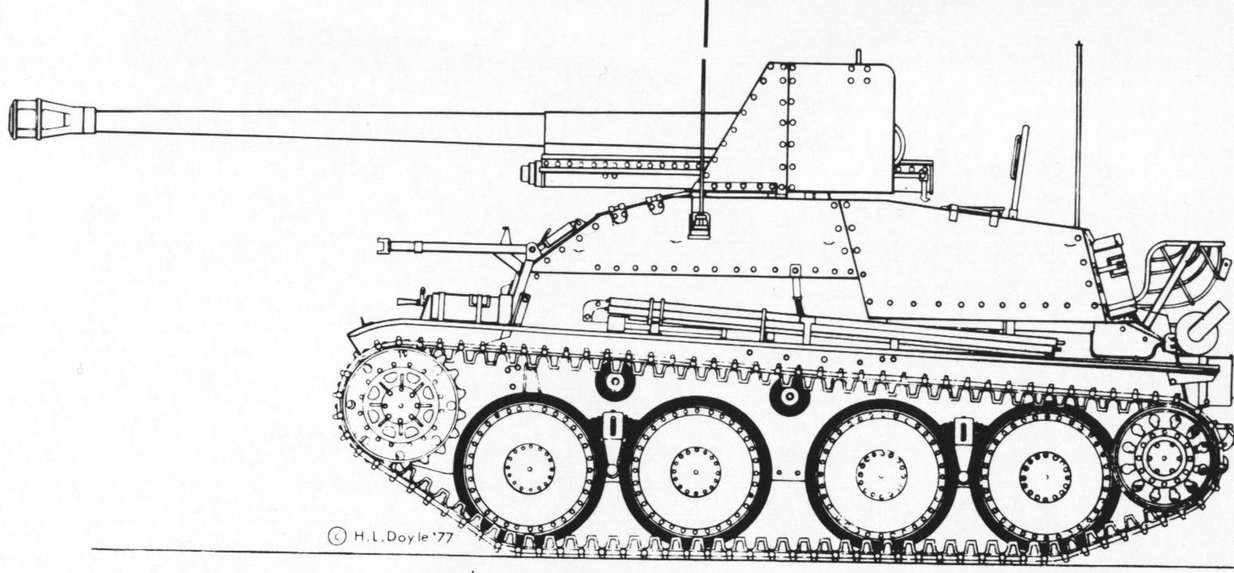
Panzerjager 38(t) Series

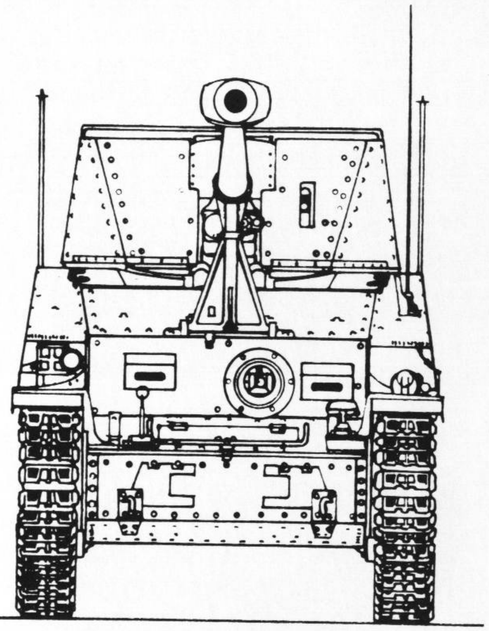
In late 1941 it was clear that a tank with a 3.7 cm gun had little fighting value. Germany had at that time only one tank capable of accommodating the long 7.5 cm gun, the PzKpfw IV. But the anti-tank units desperately needed a large number of vehicles carrying such a gun to be able to deal with the Russian T-34s and KV-Is. From the Russian front, the Wehrmacht had a large number of the excellent Soviet 7.62 cm gun, these being captured during the Summer 1941 advances.

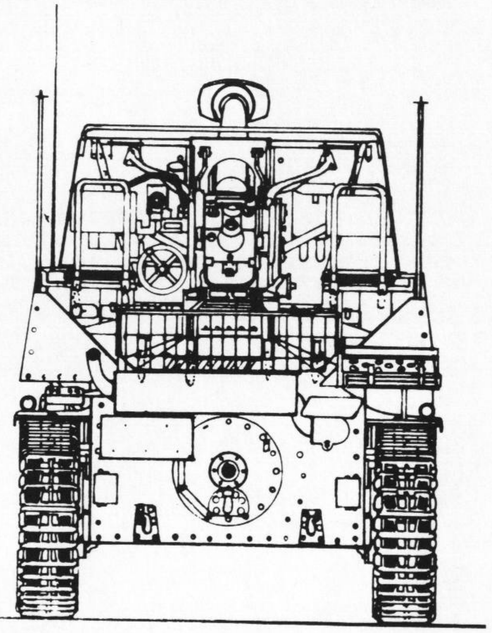
The Panzerjager 38(t) fur 7.62 cm PAK 36(r) (or SdKfz 139) was a simple conversion. The turret and the superstructure top plate were removed, which was facilitated by the bolted construction of the vehicle. The cradle of the gun was fashioned from the ground mounting, the only change being a welded stop in the teeth of the elevating mechanism gear to prevent the gun from being over-elevated, because this could result in the gun recoiling into the gun platform. The gun was mounted on a cruciform with the arms welded to the hull sides and the front and rear plates. The gun shield was rather crudely constructed from 10-15 mm armor plate and provided only rudimentary protection. An open sight was provided on the left side of the gun. A total of 30 rounds was carried in unprotected bins. The crew was four men. The gun was rechambered for German ammunition and had a muzzle velocity of 960 m/sec. It fired a 4.15 kg AP shell which could penetrate 94 mm of armor at 1,000 m.

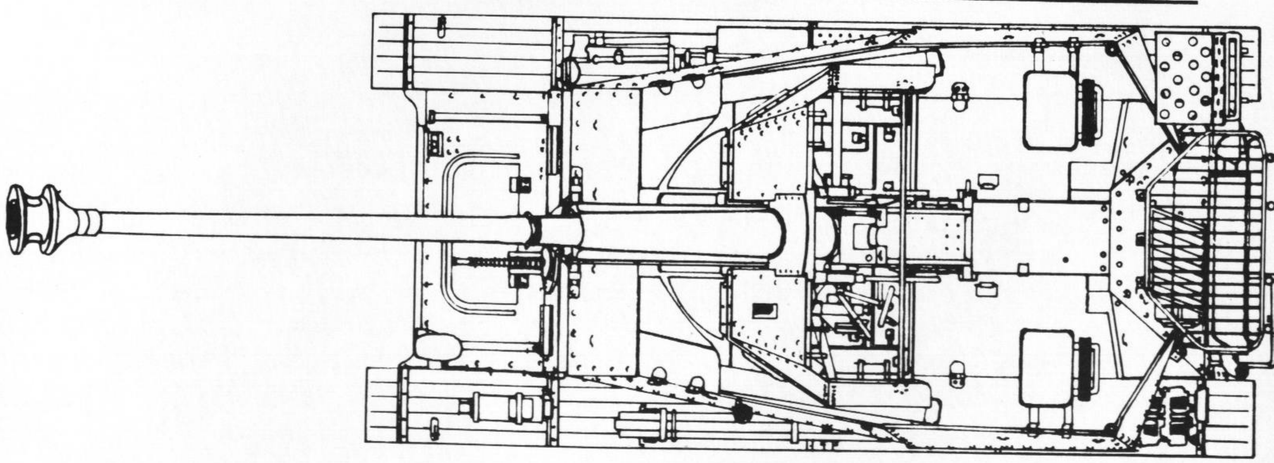
Though rather crude and badly protected, it provided urgently needed mobility for an efficient anti-tank gun. A total of 344 Panzerjagers were built, 176 on the ausf G chassis, the rest on the ausf H chassis, between April and October 1942. The ausf H chassis had a more powerful engine, developing 150 HP at 2,600 R.P.M. 19 further units were converted from PzKpfw 38(t)s returned to the factory in 1943.

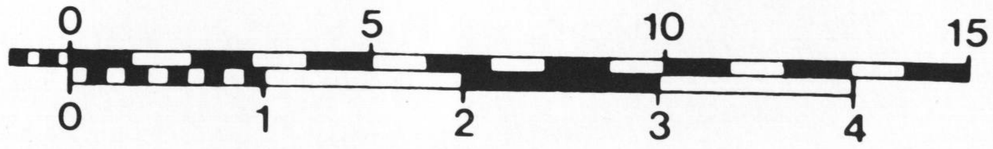
This side view of a SdKfz 139, Panzerjager 38(t) armed with a 7.62 cm Russian mod. 36 antitank gun, shows the high silhouette and very limited crew protection of this early conversion. Later designs had somewhat better protection. (Bundesarchiv)



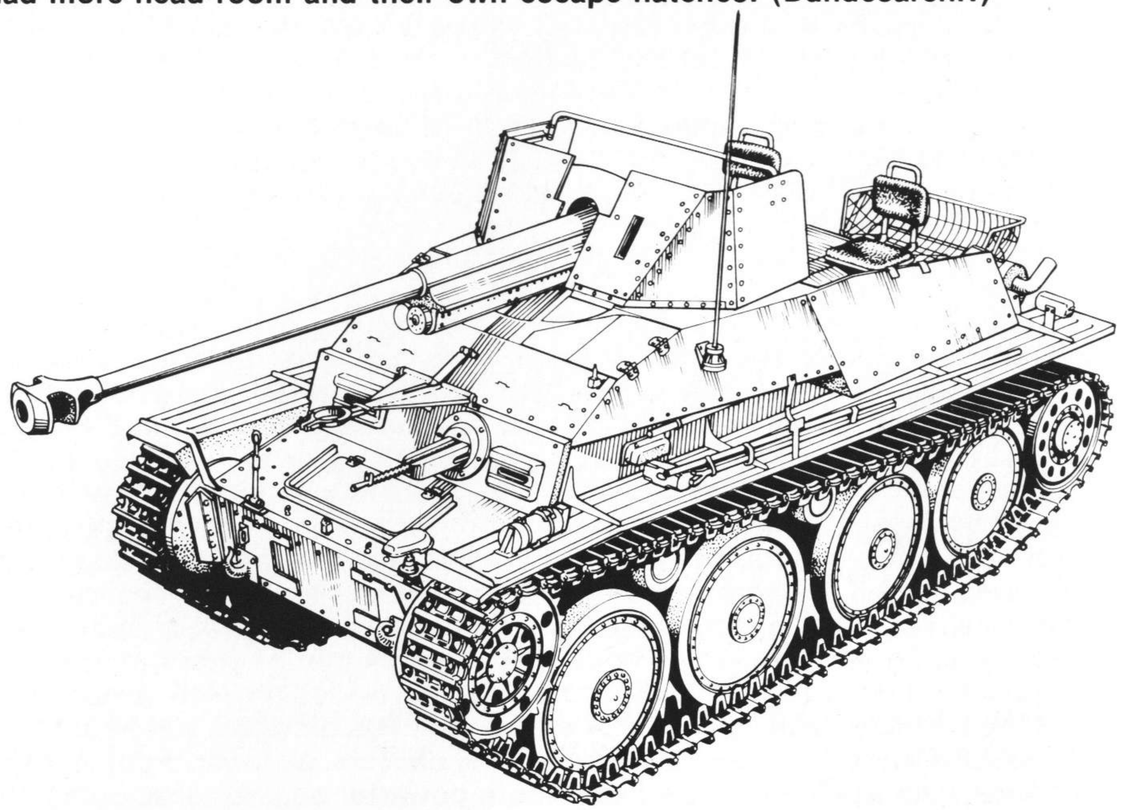


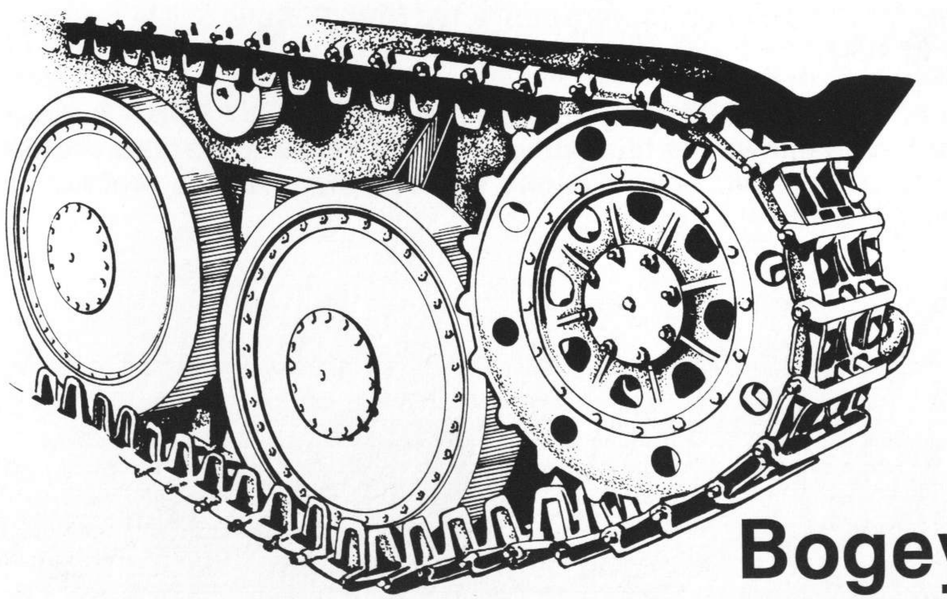






The SdKfz 139 was built on both the ausf G and H chassis, the H having a more powerful engine. Compared with the basic tank, both driver and radio operator had more head-room and their own escape hatches. (Bundesarchiv)





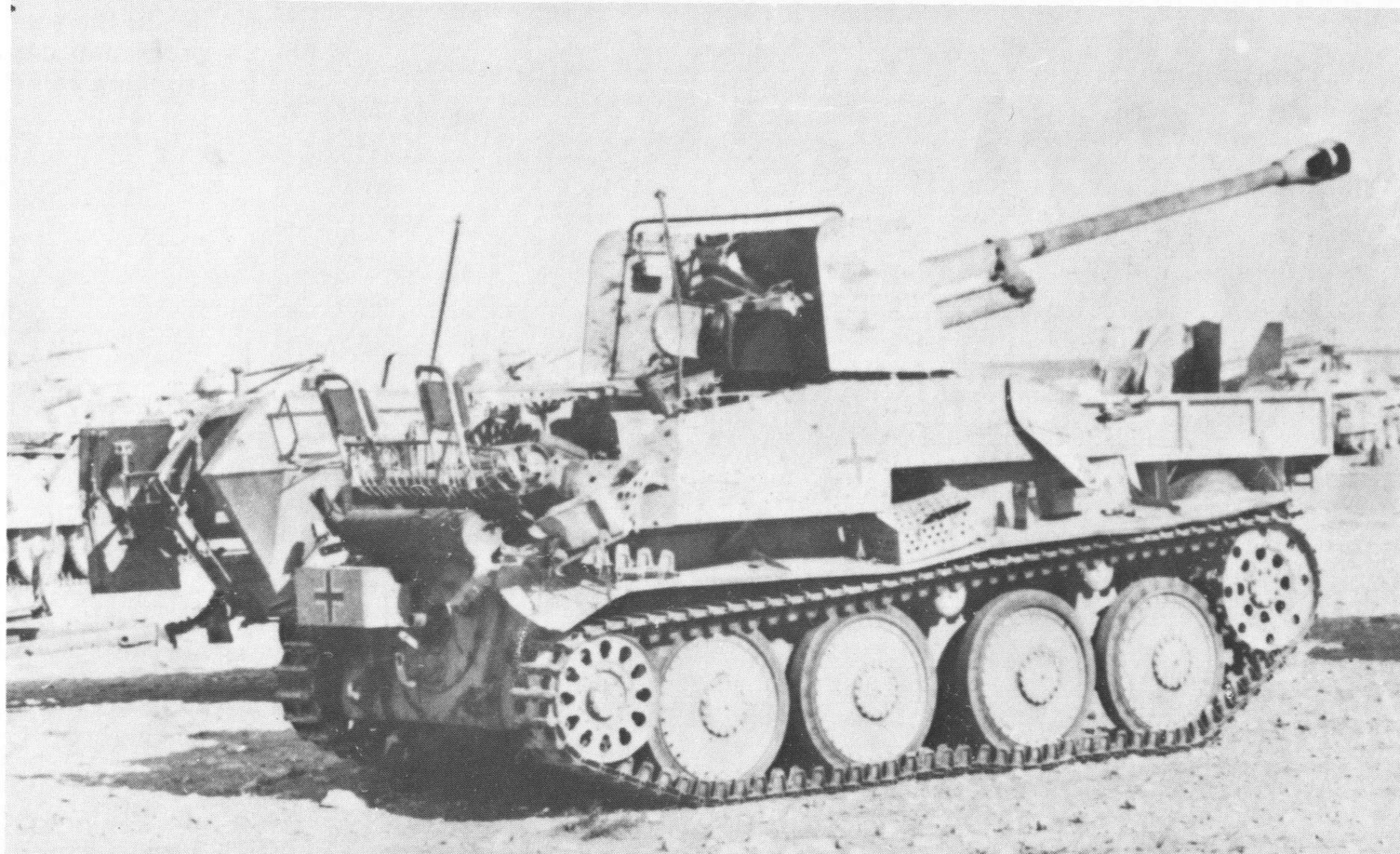
Bogey truck

The Panzerjager 38(t) fur 7.62 cm PAK 36(r) was a relatively crude adaption, using captured Russian anti-tank guns rechambered for German ammunition. As can be clearly seen, crew protection was minimal and the silhouette was too high. Nevertheless, it provided the badly needed mobility for the anti-tank guns of the infantry formations. On an open steppe, like this area near Stalingrad, it was too vulnerable. (Bundesarchiv)

A Panzerjager 38(t) loaded and ready to go to the front. This particular vehicle is an ausf H. The gun was seriously out of balance and could not be fired when the vehicle was moving. The double-hinged plate hanging down at the hull side is the radio operator's hatch. (Bundesarchiv)

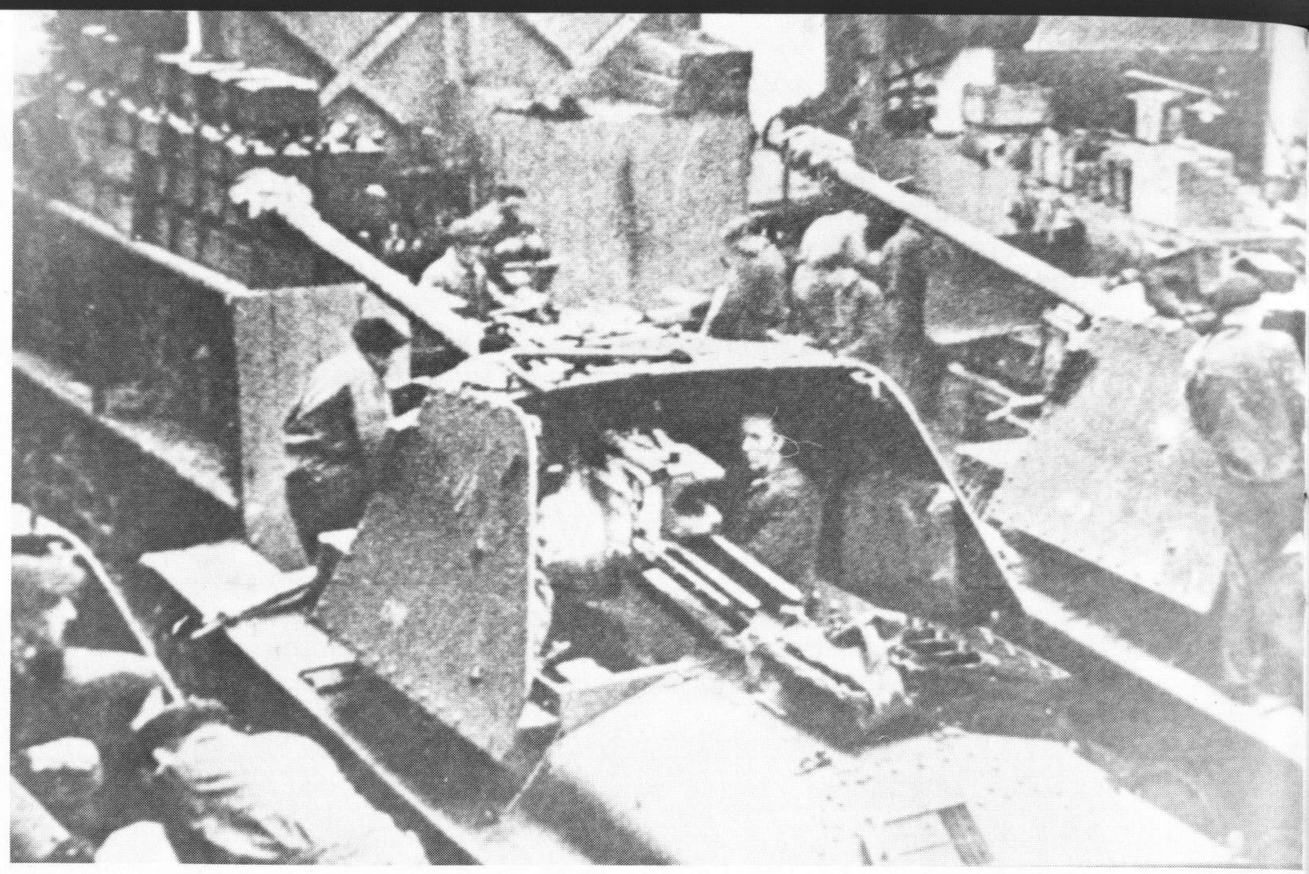
Captured Afrika Korps equipment in Lybia, 1942. This vehicle is in perfect condition and was later shipped to England and tested by the School of Tank Technology. The color appears to be overall yellow-brown. (Author)

Because of their high silhouettes, the SdKfz 139s were used from camouflaged ambush positions whenever possible. This practice often allowed the crews to hold their fire until the enemy tanks were within certain killing range. (Bundesarchiv)



PzJag 38(t) fur 7.5cm PAK 40, ausf H (SdKfz 138)

When the PAK 40 became available in May 1942, it was quickly adapted for the Panzerjager 38(t) fur 7.5 cm PAK 40/3, or SdKfz 138, the first 33 vehicles of this type based on ausf H chassis being manufactured in November 1942. The conversion was very similar to the SdKfz 139, the gun again being carried on a cruciform mount welded in place of the former top plate of the superstructure. The gun shield was of a better design and provided slightly better protection for the gun crew. The gun had a muzzle velocity of 930 m/sec and, with a shell weighing 4.1 kg, could penetrate 90 mm of armor at 1,000 m. The standard crew of four was carried: driver; hull gunner/radio operator side by side to the driver, manning the MG 37(t); and commander/gunner and loader for the main gun. 242 vehicles were manufactured between November 1942 and September 1943, and a further 116 were converted from PzKpfw 38(t)s in 1943.



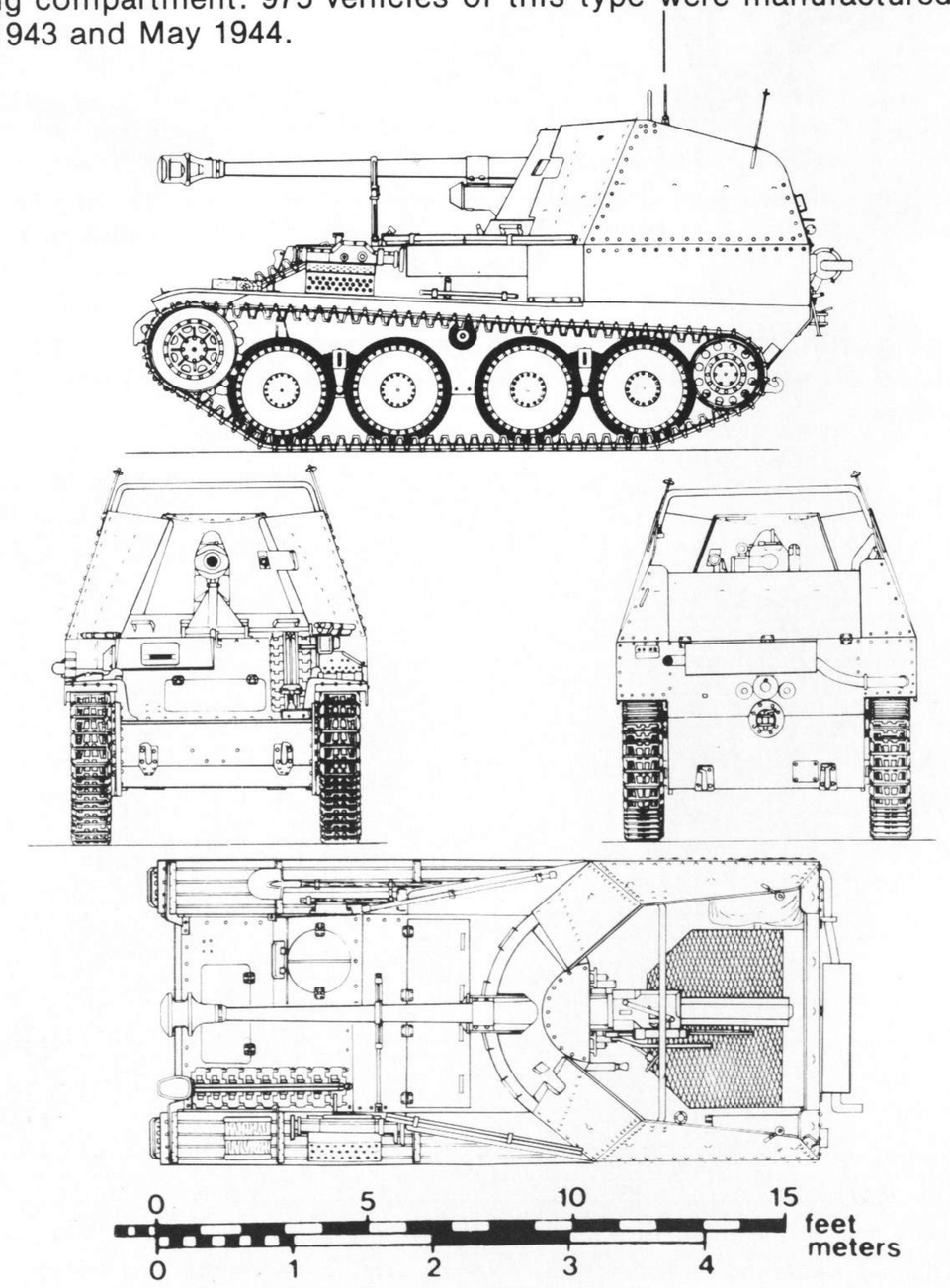
The SdKfz 138 carried the 7.5 cm PAK 40 (L/48) in an improved lower superstructure. All production vehicles were based on ausf H chasses. The picture shows part of the production line at BMM in Prague. (Authors)

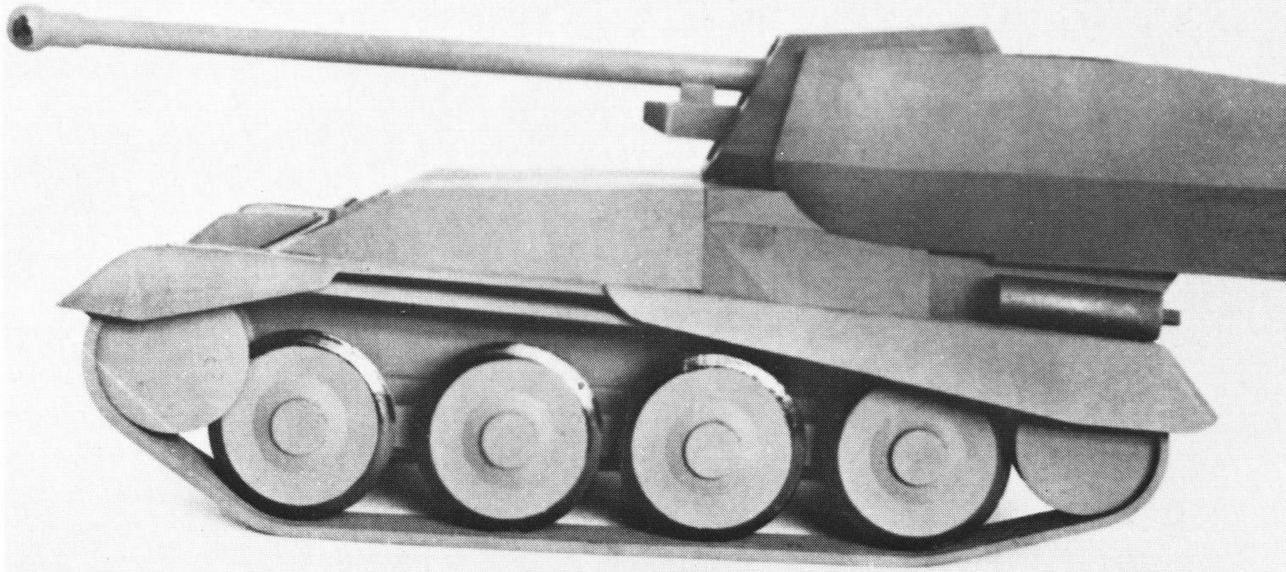
A BMM factory photograph, showing the prototype of a Panzerjager mounting the 7.5 cm StuK K 40(L/45). For production vehicles the PAK 40 was adopted. (Authors)

This SdKfz 138 appears to be in somewhat better condition than the crew! While their wounds are apparently not serious, this group of men is living proof that crew protection on these open vehicles left much to be desired. (Bundesarchiv)

PzJag 38(t) fur 7.5 cm PAK 40, ausf M (SdKfz 138)

The final version of the Panzerjager 38(t) fur 7.5 cm PAK 40/3 utilized the modified chassis ausf M, which was originally developed for the infantry howitzer. The engine was mounted in the center, the front part was redesigned with one flat glacis plate sloped at 67°. The driver sat on the right front side under a cast armor hood with a hinged visor. The gun was mounted in the rear at pannier height and was shielded by a four-sided superstructure which extended over the tracks and to the extreme rear of the hull. Armor on the gun shield was again 10 mm, but the front plate was decreased to 15 mm and the glacis plate to 10 mm. A crew of four was again carried, but this time three crew members were in the fighting compartment. The hull machine gun was deleted. 27 rounds of ammunition for the gun were carried in three bins in the fighting compartment. 975 vehicles of this type were manufactured between April 1943 and May 1944.





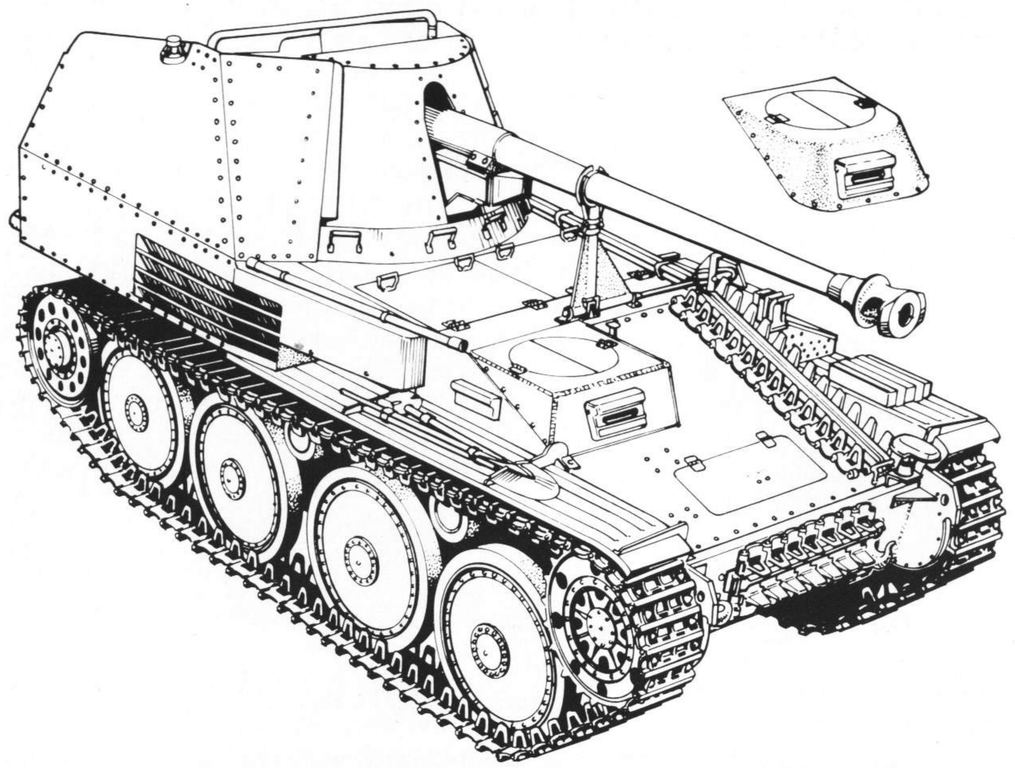
A mock-up for a Panzerjager 38(t) ausf M fur PAK L/60, 7.5 cm. The final design was much simpler and somewhat better protected. (Authors)

Three brand new Panzerjager 38(t)s in overall dark yellow camouflage paint in Belgium, 1944. The two-tone appearance is the result of dust covering the lower parts of the vehicles while canvas tarpaulins protected the upper superstructure: note the tie-down clips at the color demarcation. The PAK 40/3 gun was deadly against any Allied tank, but the minimal armored protection of these vehicles precluded their use in tank to tank combat. (Bundesarchiv)

A heavily camouflaged SdKfz 138 shows the ammunition stowage along the side walls and a rear plate which could be hinged down. (Bundesarchiv)

This SdKfz 138 on the ausf M chassis represents the typical appearance of many German vehicles in 1944 and early 1945. Foliage served to conceal the vehicle from enemy aircraft and troops, and soldiers often rode on any motorized vehicles, as these open self-propelled weapons were often issued to infantry units which were short of their own motor transport. (Squadron/Signal)

PzJag 38(t) ausf M (SdKfz 138)



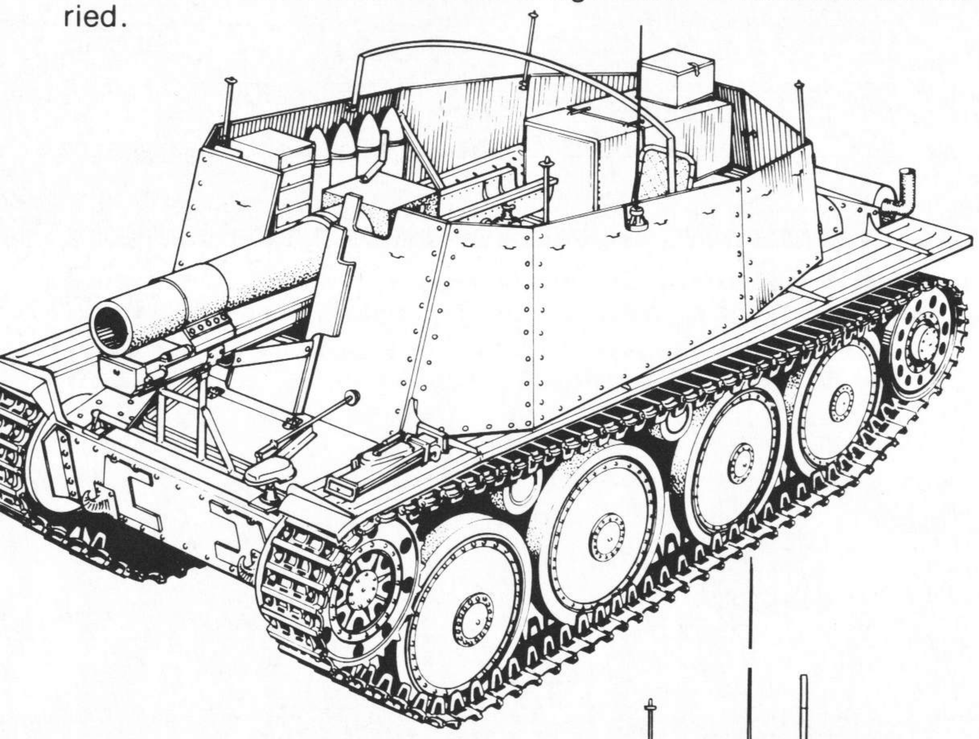
Camouflaging with branches became more and more common in 1944 as the Allies gained air supremacy. This vehicle carries an extra crew member. (Bundesarchiv)

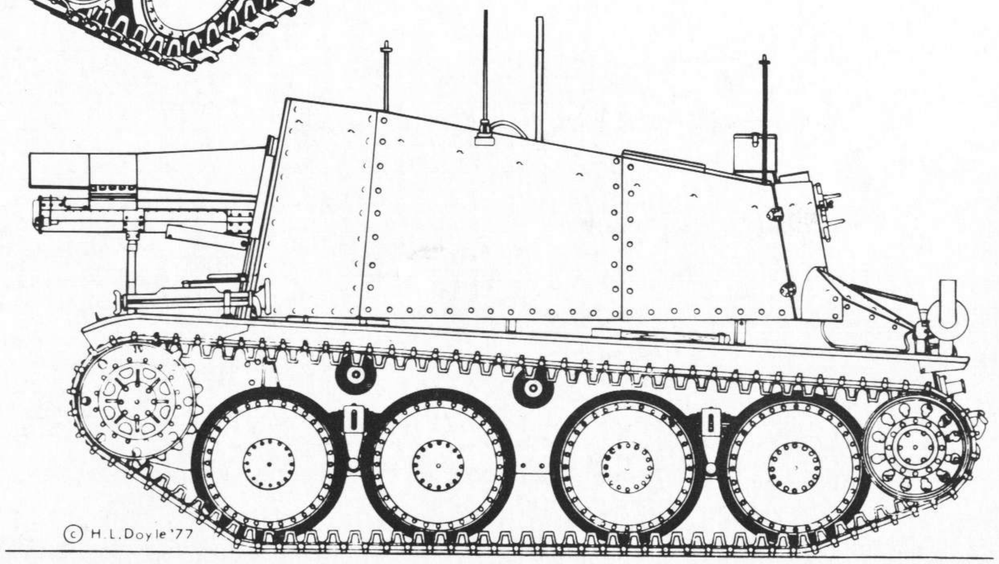
Ausf M chassis had only one return roller and simplified sprocket wheel. This vehicle has an artfully executed camouflage paint job. Note the slight grease leaks from the wheel bearings, and the wires attached to the armor to hold foliage for camouflage. (Bundesarchiv)

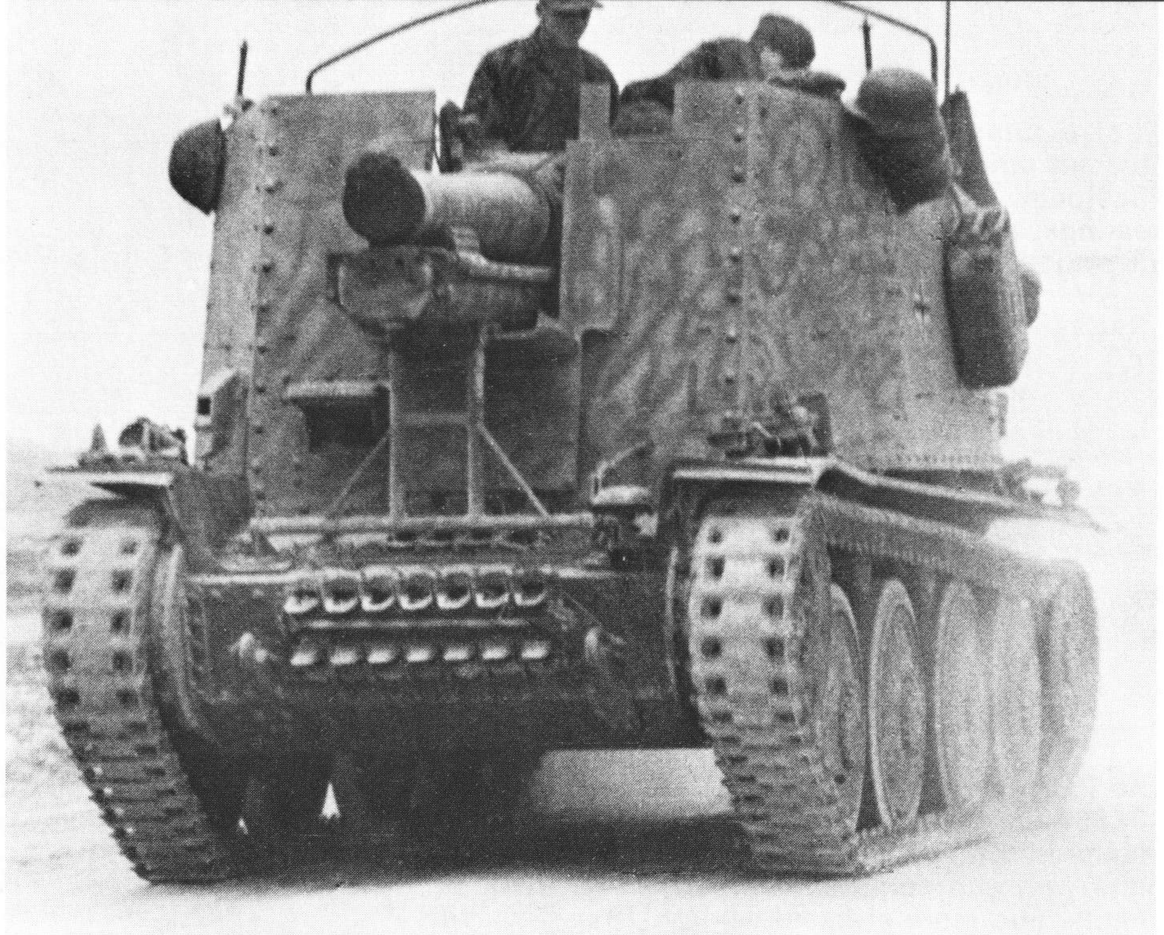
The Panzerjager 38(t) ausf M, armed with the 7.5 cm PAK 40/3, seen in Belgium. The new ausf M chassis, with the engine in the center, lighter armor, new sloped front glacis plate, and gun compartment in the rear, resulted in a much simpler and more efficient vehicle. (Bundesarchiv)

15cm sIG33 (Sfl) auf PzKpfw 38(t) ausf H, M Grille (SdKfz 138/1)

To provide fully tracked supporting artillery for infantry formations, Alkett designed a conversion based on the PzKpfw 38(t) ausf H chassis, using a Rheinmetall-Borsig howitzer. The gun was again located on a cruciform mount, bolted to the sides and front and rear plates. 25 mm front and 15 mm side armor protection was built up around the gun, running from the driver's plate nearly the whole length of the vehicle. The prototype was manufactured by BMM in October 1942 and production started in February 1943. 90 vehicles were built on the ausf H chassis before the production was switched to the ausf M chassis, developed specifically for this use. By switching the engine to the center position and the gun to the back, a much better, more efficient vehicle resulted. Production was started in April 1943 and, up to September 1944, a total of 282 vehicles was built. Weight was 12 tons and a crew of four was carried.







A front view of the *GRILLE.* Note the massive gun-lock on the front plate. Though fairly high, the *GRILLE* had a much lower silhouette than other self-propelled guns built on French or even German chassis. (Bundesarchiv)

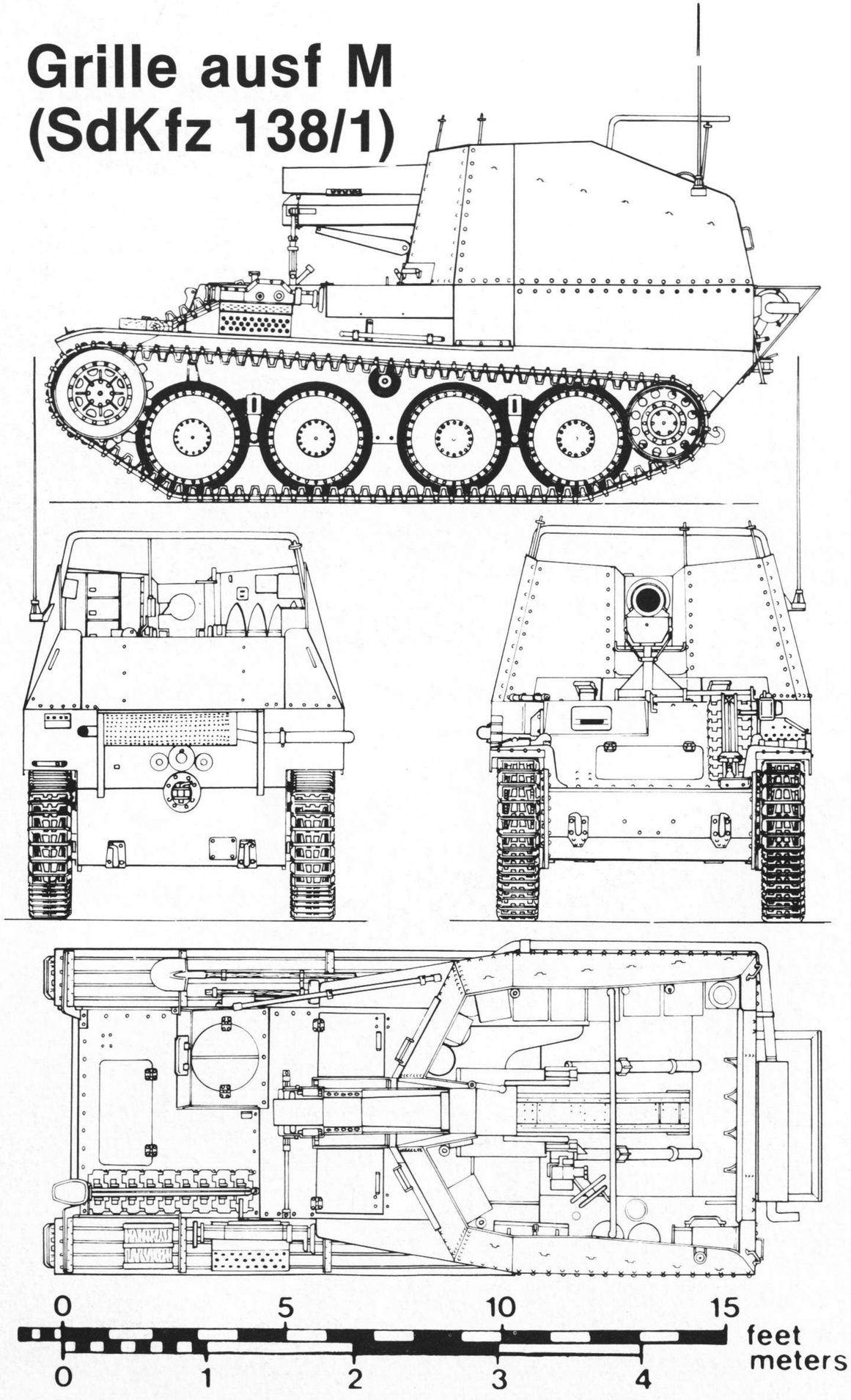
The first ninety self-propelled 15 cm infantry howitzers were built on the ausf H chassis of the 38(t). This conversion provided the artillery with the much needed mobility and cross-country performance which no towed gun could equal. Moreover, the gun was always ready for firing and did not have to be emplaced first. (Bundesarchiv)

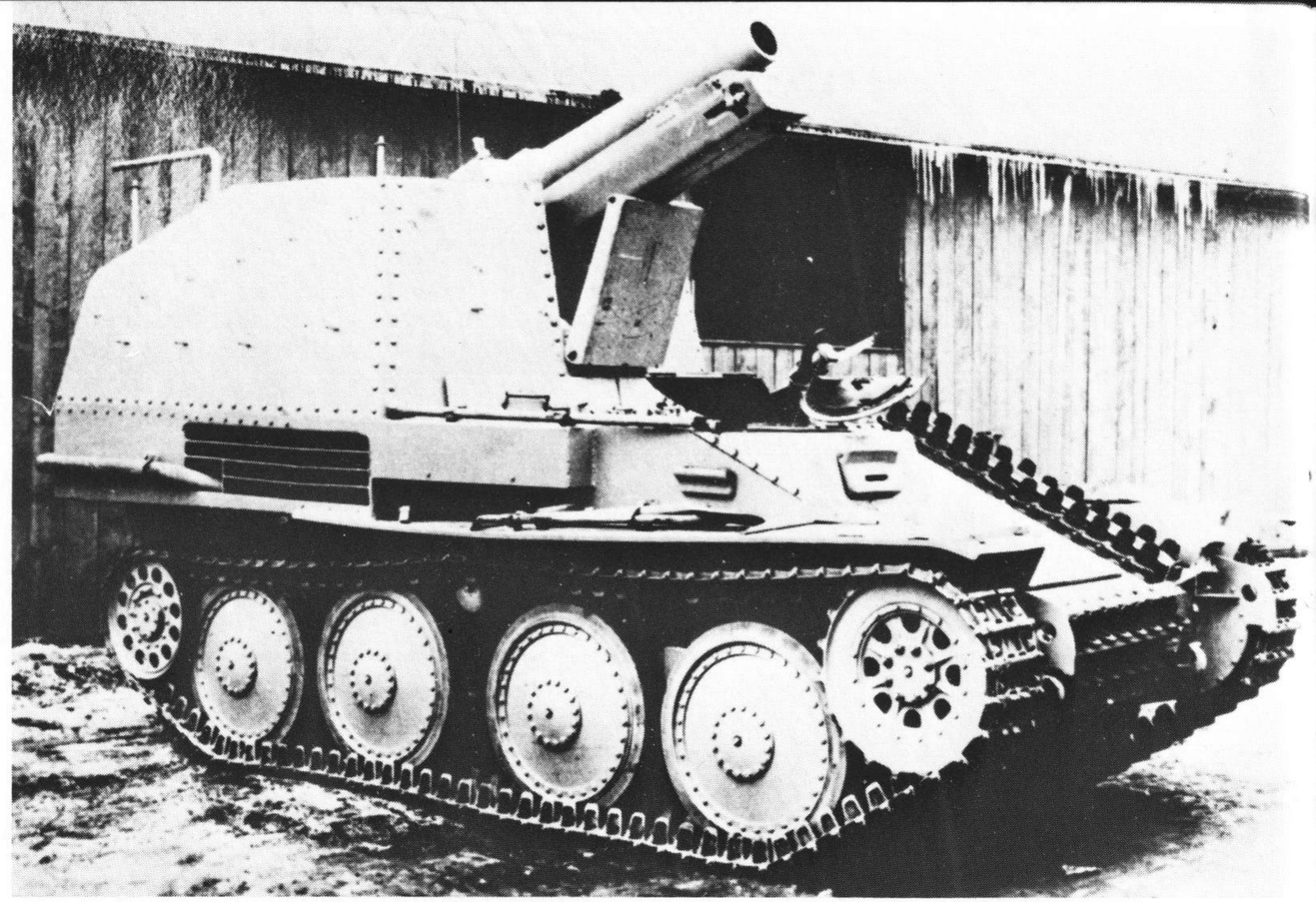
In flat country, crews of the *GRILLEs* often tried to use available cover to conceal their vehicles. The tree and vehicle mounted foliage would be quite effective in disguising the high square shape of this ausf H version. (Bundesarchiv)

A SdKfz 138/1 *GRILLE* in open country. The superstructure provided all-round protection for the crew against small caliber bullets and shell fragments. The hoops were for a canvas cover. (Author)

A well-camouflaged *GRILLE* passes a 5 cm PAK 38 in a French village during pre-invasion maneuvers. (Bundesarchiv)

Grille ausf M (SdKfz 138/1)



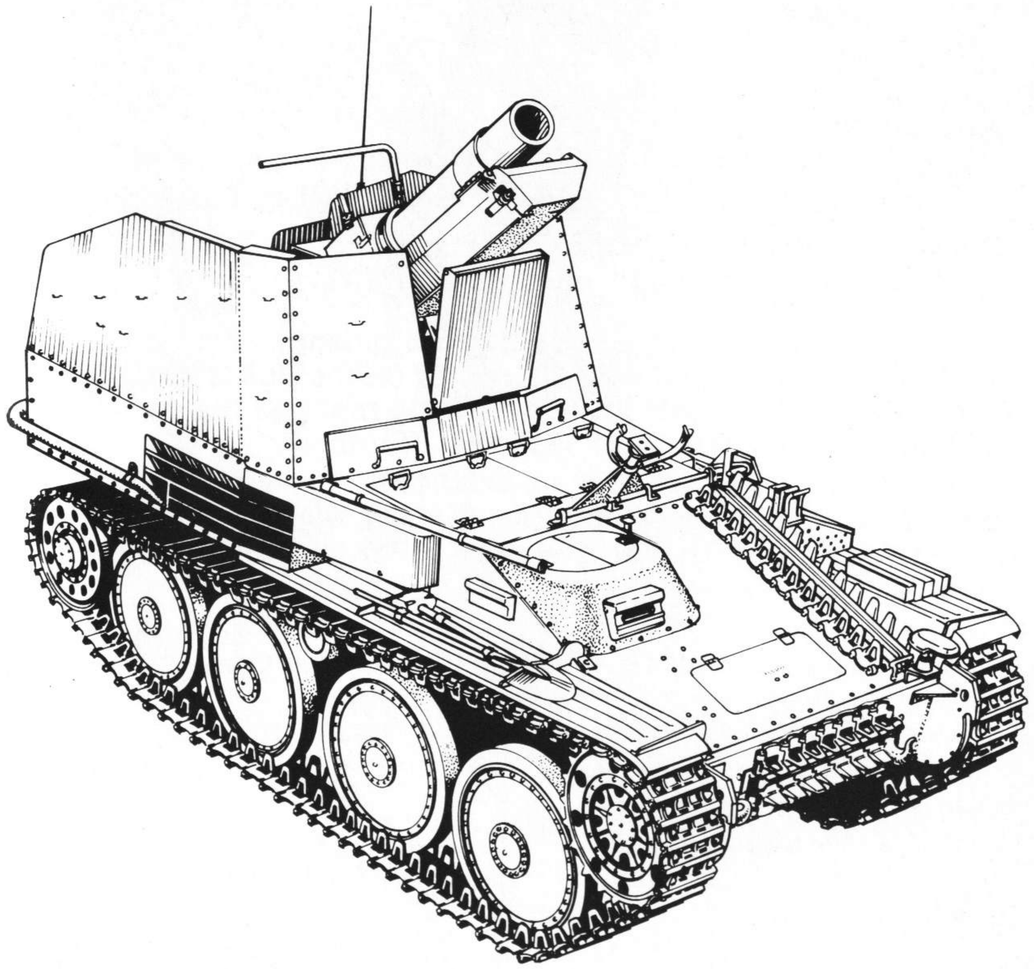


A BMM factory photograph of the SdKfz 138/1 ausf M. The gun was the German standard heavy infantry howitzer, which could fire an 84 lb. shell up to 5,000 m. These vehicles had a family resemblance to the Panzerjager 38(t) ausf M. (Author)

A rear view of the vehicle on display at the Aberdeen Proving Ground museum. The cradles on the back plate were for ready ammunition. The gun could fire two types of HE ammunition at both high and flat trajectories. (Author)

A view of a battery of *GRILLEs*. The nearest vehicle is based on the ausf M chassis, and shows the new silhouette, gun travel lock, and the spring loaded plate which closed the gun aperture at maximum elevation. The other vehicles are ausf Hs; note the different aperture cover plates on these models. (Bundesarchiv)

Grille ausf M (SdKfz 138/1)

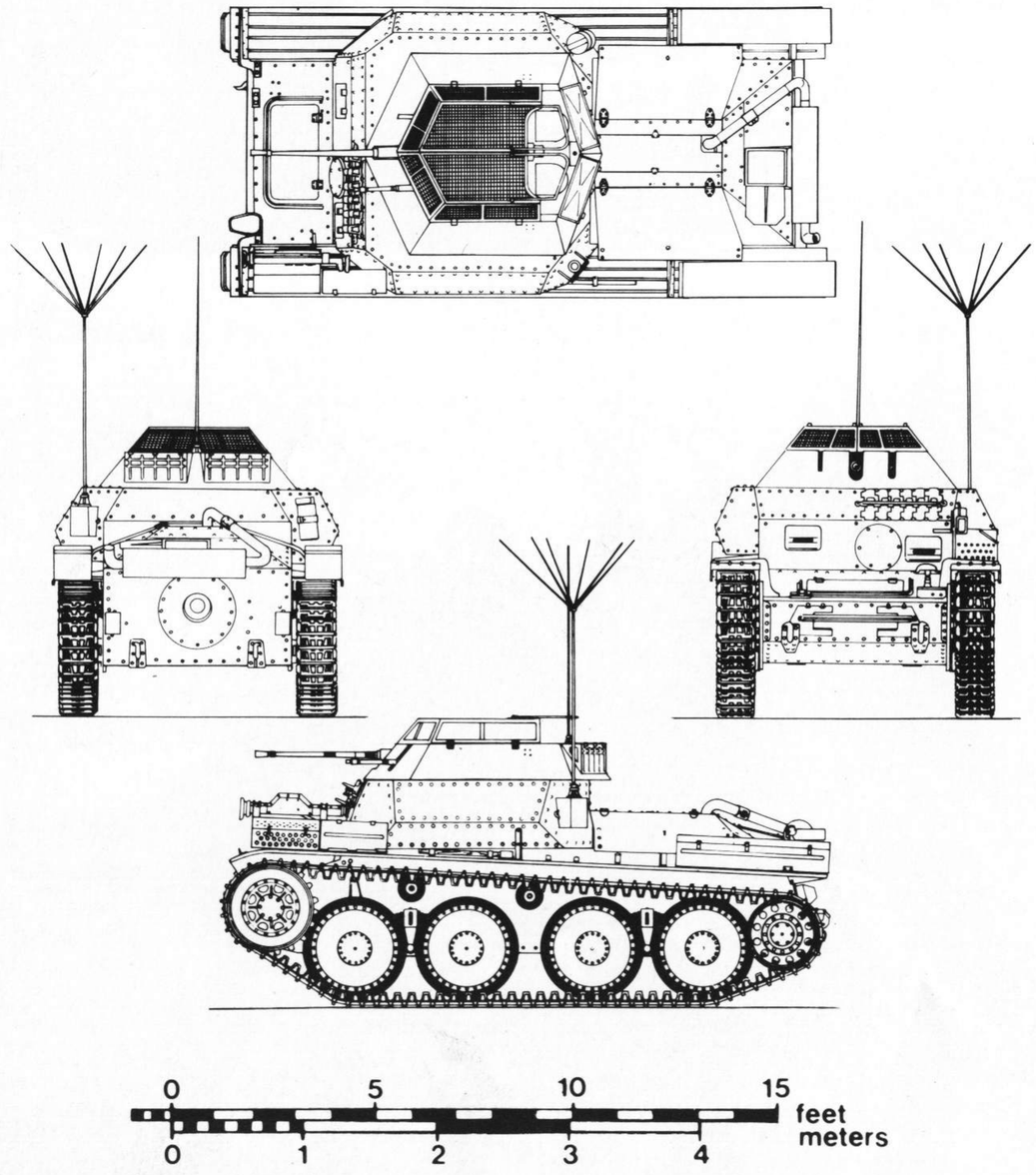


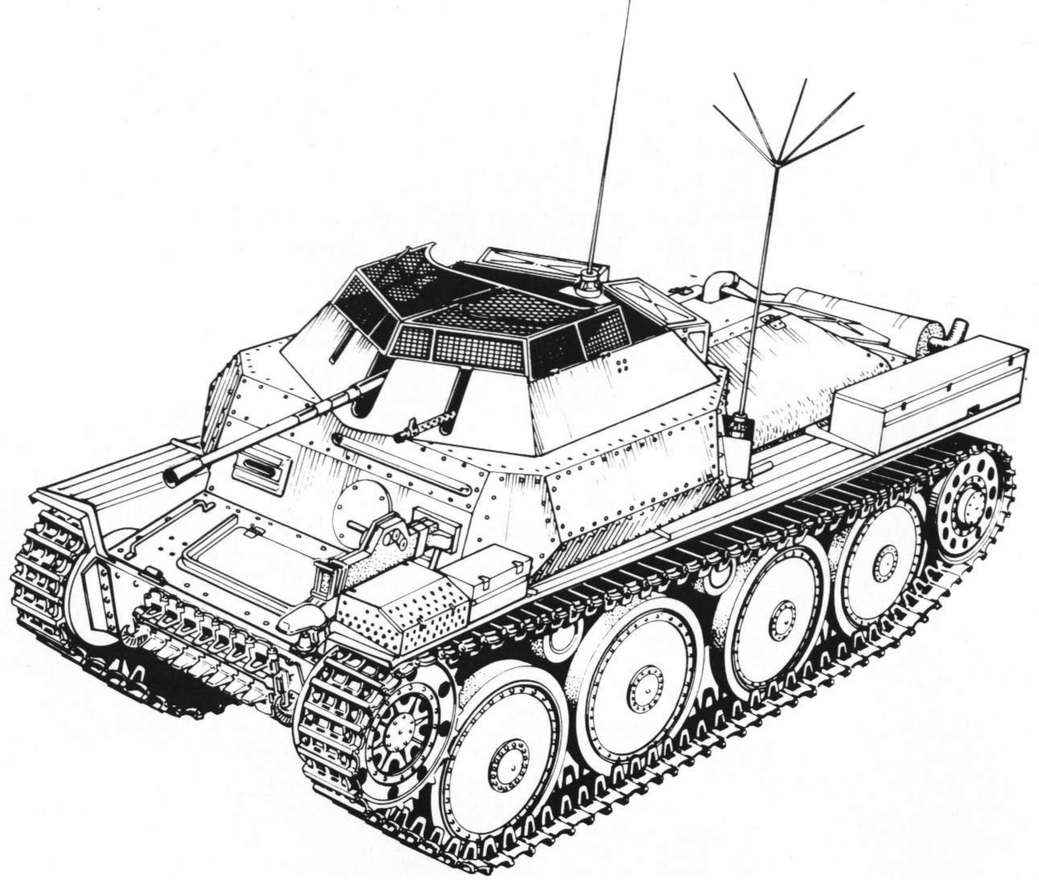
A heavily camouflaged *GRILLE* at high speed. Though the fighting compartment was rather cramped due to the limited width of the vehicle, the *GRILLE* had a good cross-country capability, high speed, and good range. (Bundesarchiv)

Aufklarungspanzer 38(t) (SdKfz 140/1)

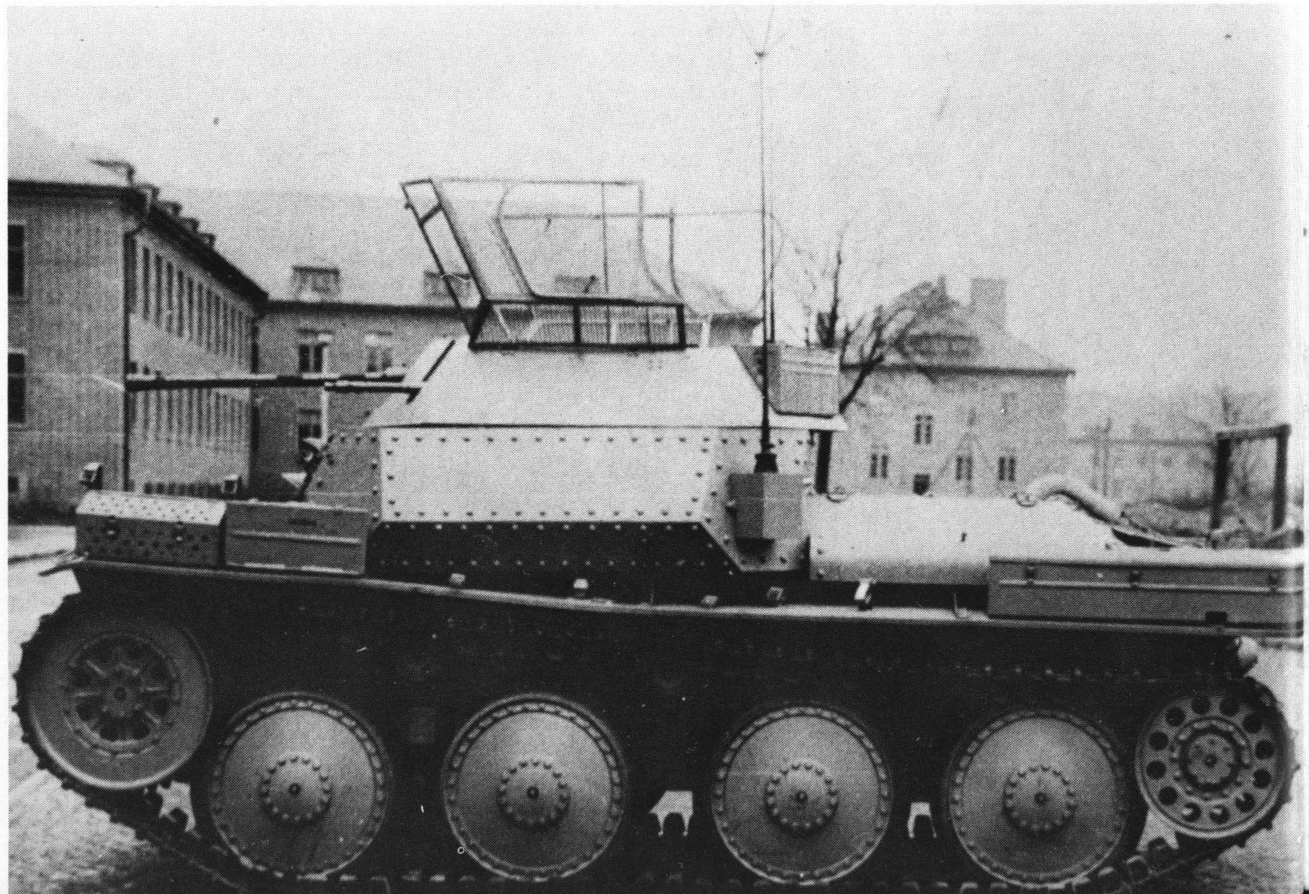
After the PzKpfw II Luchs (Lynx) was abandoned as too complicated and costly, a pressing need for a fully tracked reconnaissance vehicle was filled by adapting for this purpose PzKpfw 38(t) chassis returned for rebuilding. In February and March 1944, 70 vehicles had their original turrets removed and a new superstructure fitted.

On 50 vehicles, the 2 cm Hangelafette 38 turret was used, the same turret used on the SdKfz 234/1 armored car. Two prototypes of an Aufklarungspanzer armed with the 7.5 cm KwK 38 L/24 were built. The remaining vehicles were delivered without a turret.





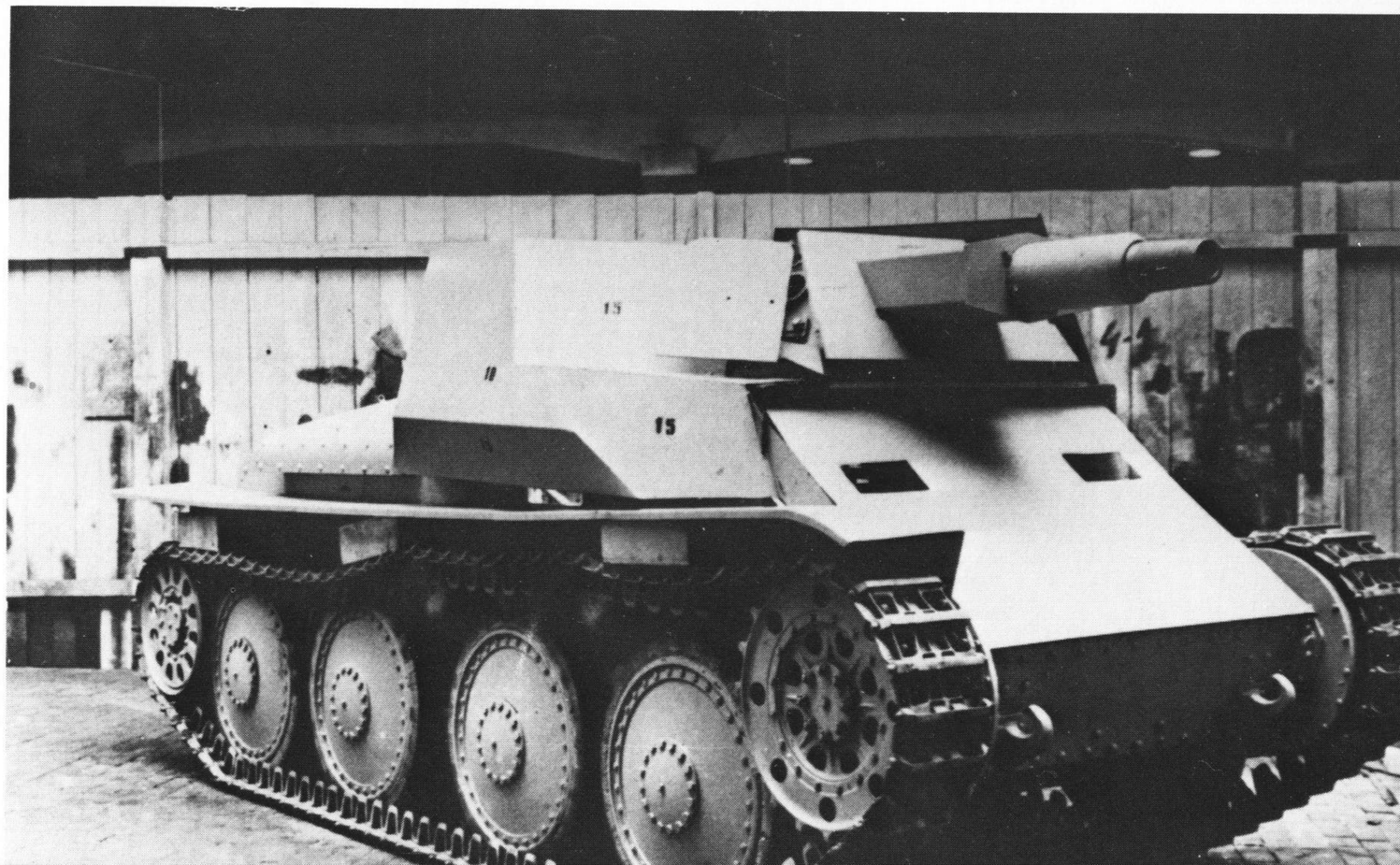
The Aufklarungspanzer 38(t), or recce tank, was built in two variants. This more numerous version had the 2 cm Hangelafette 38 turret as on the SdKfz 234/1 armored car. The long range rod aerial with the "star" on top replaced the cumbersome and conspicuous frame antennas of 1939-1941. (Author)



The low turret necessitated heightening of the crew compartment, since the seats for the commander and gunner were hung from the turret ring and rotated with the turret. (Author)

A top rear view of the SdKfz 140/1. Fifty PzKpfw 38(t) chassis were rebuilt in 1944. Like the earlier 4-wheel armored cars, this vehicle had an open turret with anti-grenade screens to protect the crew. (Author)

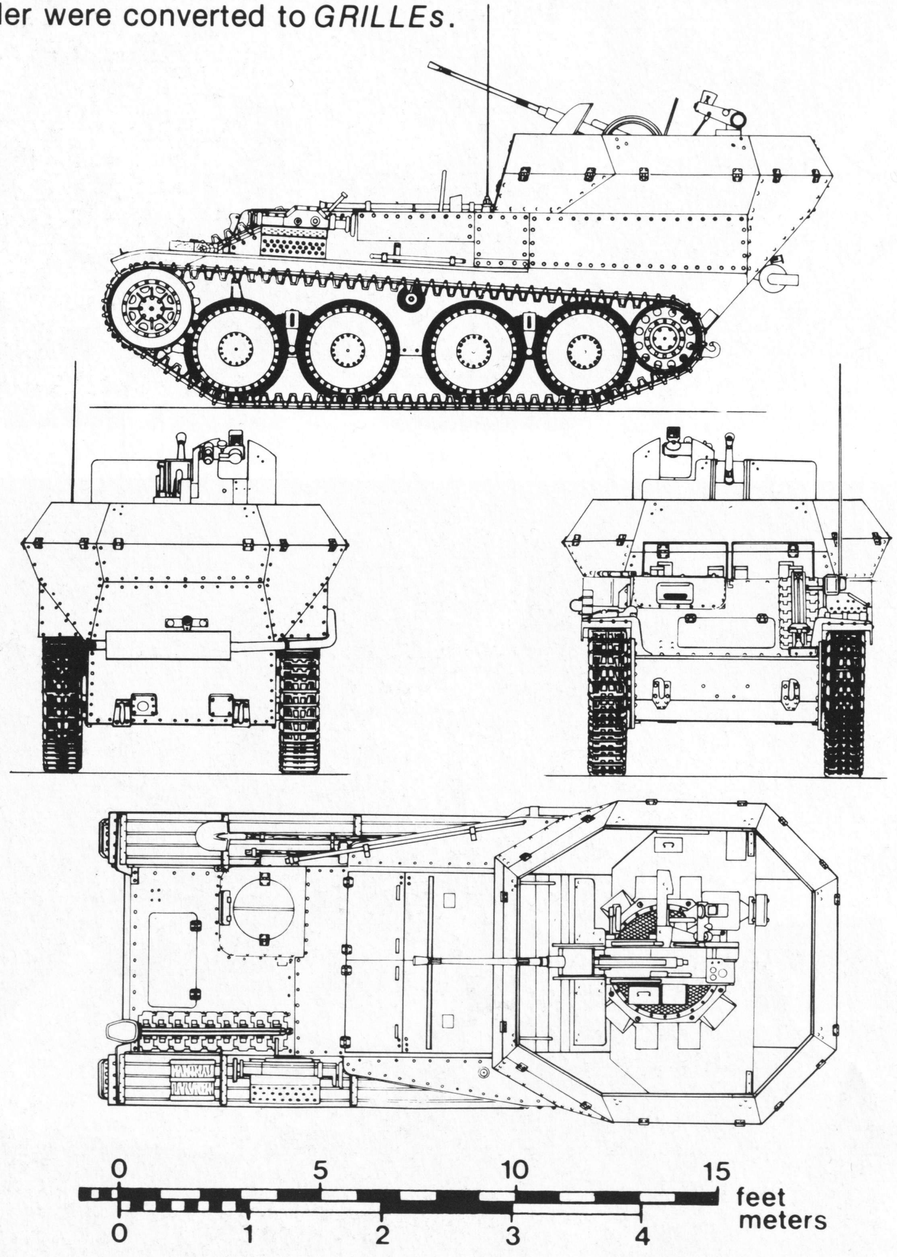
A very rare photograph of the mock-up of the Aufklarungspanzer 38(t) with the short 7.5 cm gun as used originally on the PzKpfw IV. Only twenty vehicles were to be thus converted, and it is uncertain if more than only two were completed. (Author)



Flakpanzer 38(t) ausf M (SdKfz 140)

Between November 1943 and February 1944 BMM manufactured 140 anti-aircraft tanks on the ausf M chassis. A 2 cm FLAK 38(L/55) was mounted in the rear of the vehicle and was enclosed in an armored superstructure, the upper half of which could be opened to provide more room for the crew and allow greater depression for the gun.

In this configuration, the vehicle was capable of speeds up to 50 km/hour on roads and weighed 9.8 tons. Crew was 4-5 men. Inadequate firepower was the major weakness of these vehicles and, in fact, the last ten chasses built for this order were converted to *GRILLEs*.

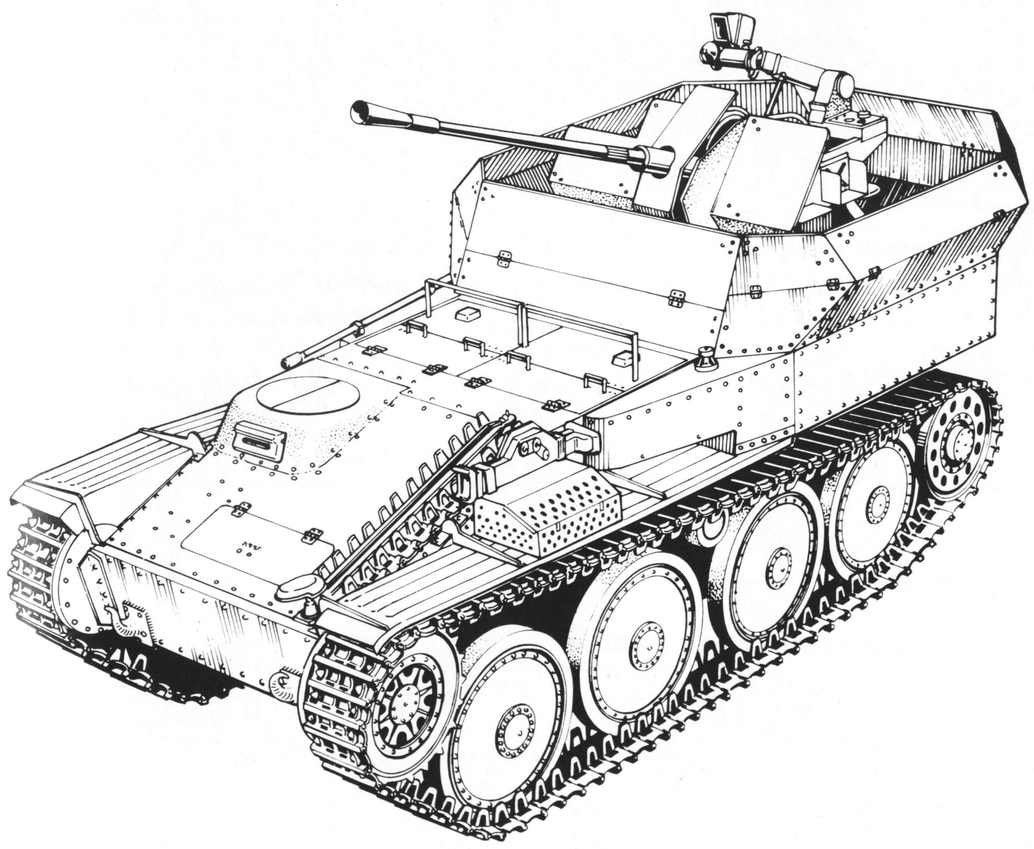


The Flakpanzer 38(t) was built on the ausf M chassis with the engine in the center. This allowed the gun to be mounted comfortably in the back. Here, the crew has positioned the vehicle and camouflaged it, and now prepares for firing. (Bundesarchiv)

With the superstructure sides lowered, the gun is ready for action. These photographs are from Normandy, 1944. Only 140 Flakpanzer 38(t)s were manufactured where thousands would have been needed. (Bundesarchiv)

One man is fitting the barrel to the 2 cm FLAK 38 L/55 gun, while the other is getting the rangefinder ready. The gun could fire armor-piercing or HE shells. (Bundesarchiv)

Flakpanzer 38(t) ausf M (SdKfz 140)



Though the FLAK 38 was a very good gun, a solitary tank was no match for swarms of rocket-firing Typhoons or Thunderbolts with their eight .50 cal MGs. During raids on enemy columns the Flakpanzers were prime targets. They were not well-armored, often being destroyed by the aircraft they were supposed to shoot down. (Doyle via author)

Jagdpanzer 38(t) Hetzer

Though the previously described Panzerjagers on the 38(t) chassis were improvisations with a high silhouette and totally inadequate crew protection, they had proven that vehicles of this type could provide very effective anti-tank capabilities to the infantry formations. Therefore, in 1943 it was decided to develop a completely redesigned version of the Panzerjager.

Originally called "leichtes Sturmgeschutz 38(t)", it was based on the well proven 38(t) chassis. The suspension, gearbox, steering and final drive units were unchanged with the only exception that the driver's position was switched to the left. The armor was completely redesigned. It had a ballistically very effective shape with no vertical plates. Even the lower hull plates were sloped at a reverse angle of 15°. The front was made from two plates, the lower nose plate at a reverse angle of 40°, and the glacis plate at a forward angle of 70°. The superstructure sides were angled at 40°. All armor joints were welded. The gun used was a modified version of the gun used in the PzKpfw IV and was mounted on the right side of the fighting compartment. Armor thickness was 60 mm in the front plate, but only 20 mm on the sides. Despite the good armor layout, the gun had the most limited traverse of all German assault guns, and this invariably led to the necessity of exposing the lightly armored sides at an angle to the target to allow the gunner some traverse to enable him to track the moving target. Another disadvantage was that the gun was originally designed for right side loading, but owing to space limitations and the positioning of the gun in the hull, the loader was positioned on the left side!

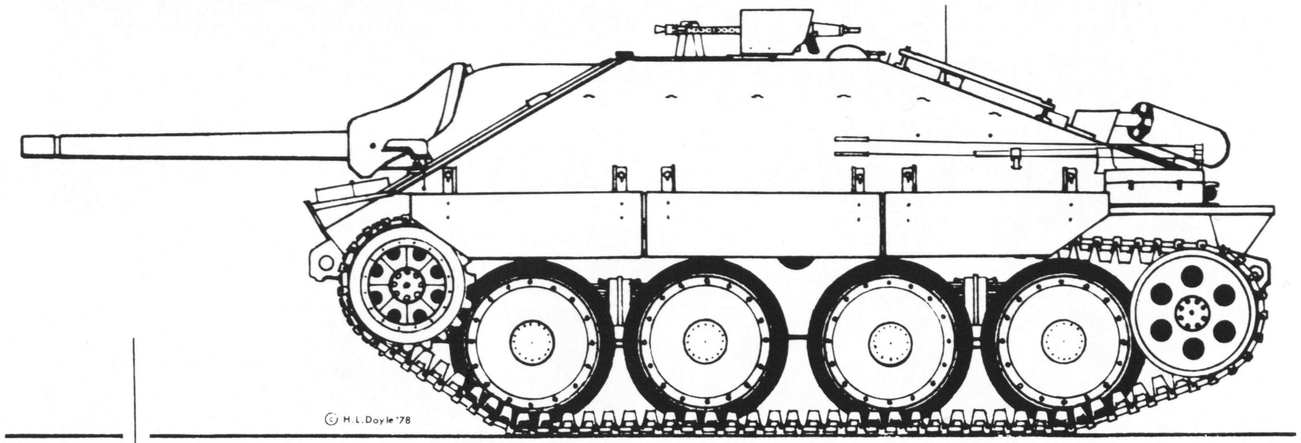
The commander sat directly behind the gun in a recess in the engine compartment. He had a two-piece hatch whose rear portion folded to the rear on the sloping engine hatch. Due to his position, he was separated from the rest of the crew, his visibility forward was severely limited when the vehicle was moving up even a slight incline, and smoke from the gun drifted directly into his position.

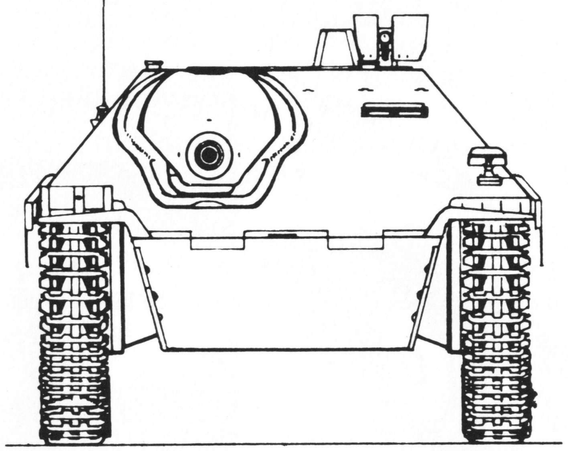
The *HETZER* had a machine gun on top of the superstructure, which was remote-controlled from inside. The machine gun was fed from fifty round drums, which necessitated frequent reloadings. But to do this, the machine gun had to be swung left to clear the hatch and back again to enable the loader to change the drums.

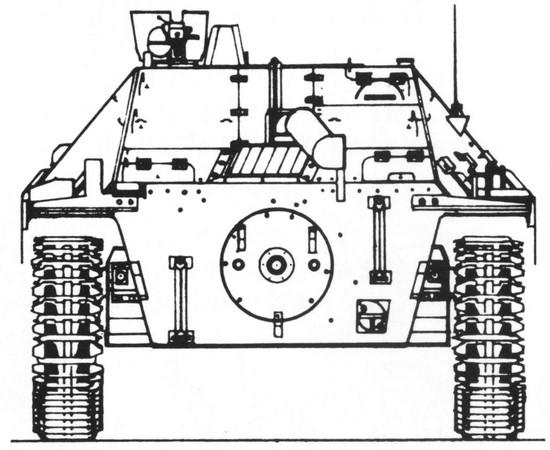
A stronger engine was installed. It was the old PRAGA six cylinder water cooled engine with its displacement enlarged to 7.75 liters and developed 158 HP at 2,600 R.P.M. This gave the 15.8 ton *HETZER* a maximum speed of 38 km/hour on roads and a range of 180 km. 41 rounds for the gun and 1200 rounds for the machine gun were carried. Crew was again four: driver, commander, gunner and loader.

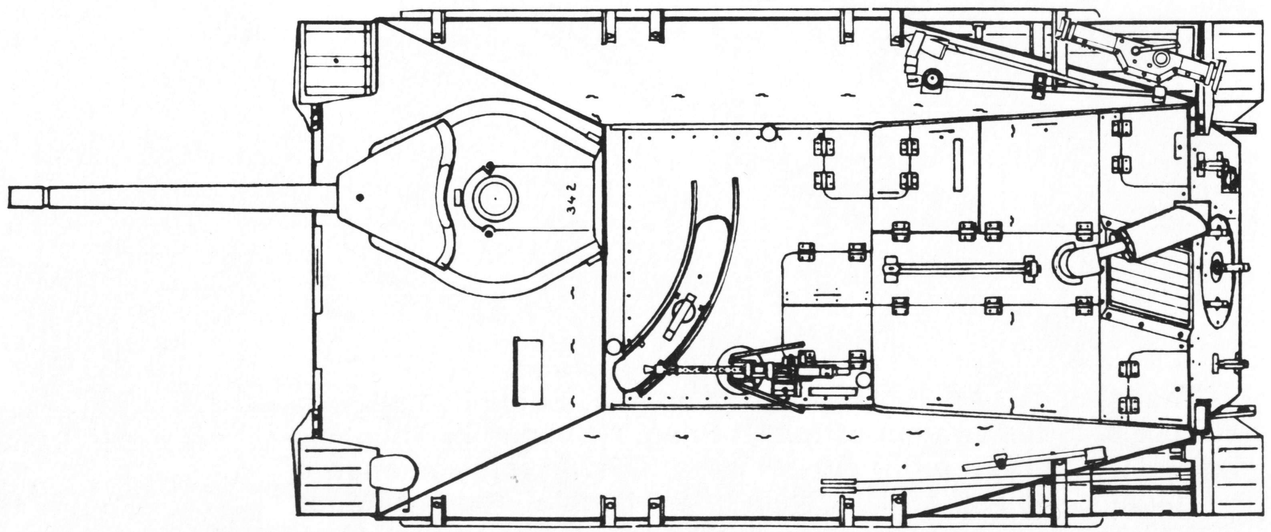
Though it had its share of shortcomings, the *HETZER* was an effective, simple and rugged vehicle. The first 23 were manufactured in April 1944 and issued to the newly formed Panzerjager Abteilungen in July 1944. The monthly production of the *HETZERs* was high and SKODA also began *HETZER* production in September 1944. Until March 1945, a total of 2,584 *HETZERs* was built. Out of this number, 2,496 were actually issued to troops. Some *HETZERs* were supplied to Hungary, 50 vehicles in October and November 1944 and another 50 in January 1945. The majority of the *HETZERs* went to Pz.Jag.Abteilungen or Kompanien which were either parts of Infantry Divisions or were operating as independent assigned units.

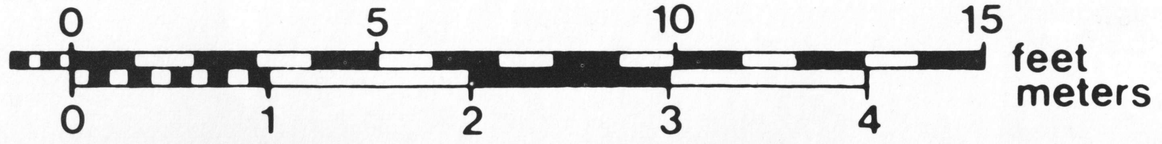
After the war, the *HETZER* was used by the Czechoslovak and Swiss armies well into the sixties.







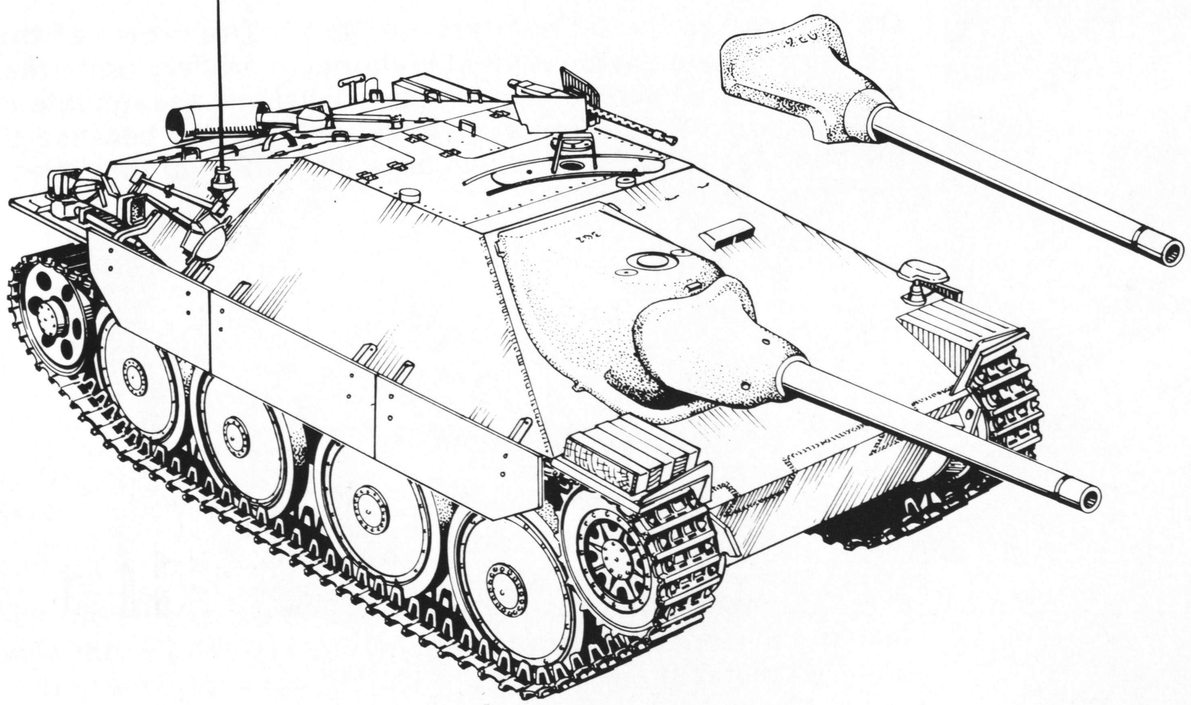




The chassis number of this *HETZER* is faintly visible under the gun on the front glacis plate. On these wartime photographs all the unit markings were usually airbrushed out by the censors. This *HETZER* probably belonged to the 8th SS Cavalry Division "Florian Geyer", and is a very early production machine. (Bundesarchiv)

A pair of brand-new *HETZERs* in the BMM works, Prague. Manufactured from April 1944, the *HETZER* formed towards the end of the war the staple of German anti-tank formations. These two vehicles represented the early production model of the *HETZER*, characterized by the narrow mantlet and early pattern rear idler. (Author)

Hetzer



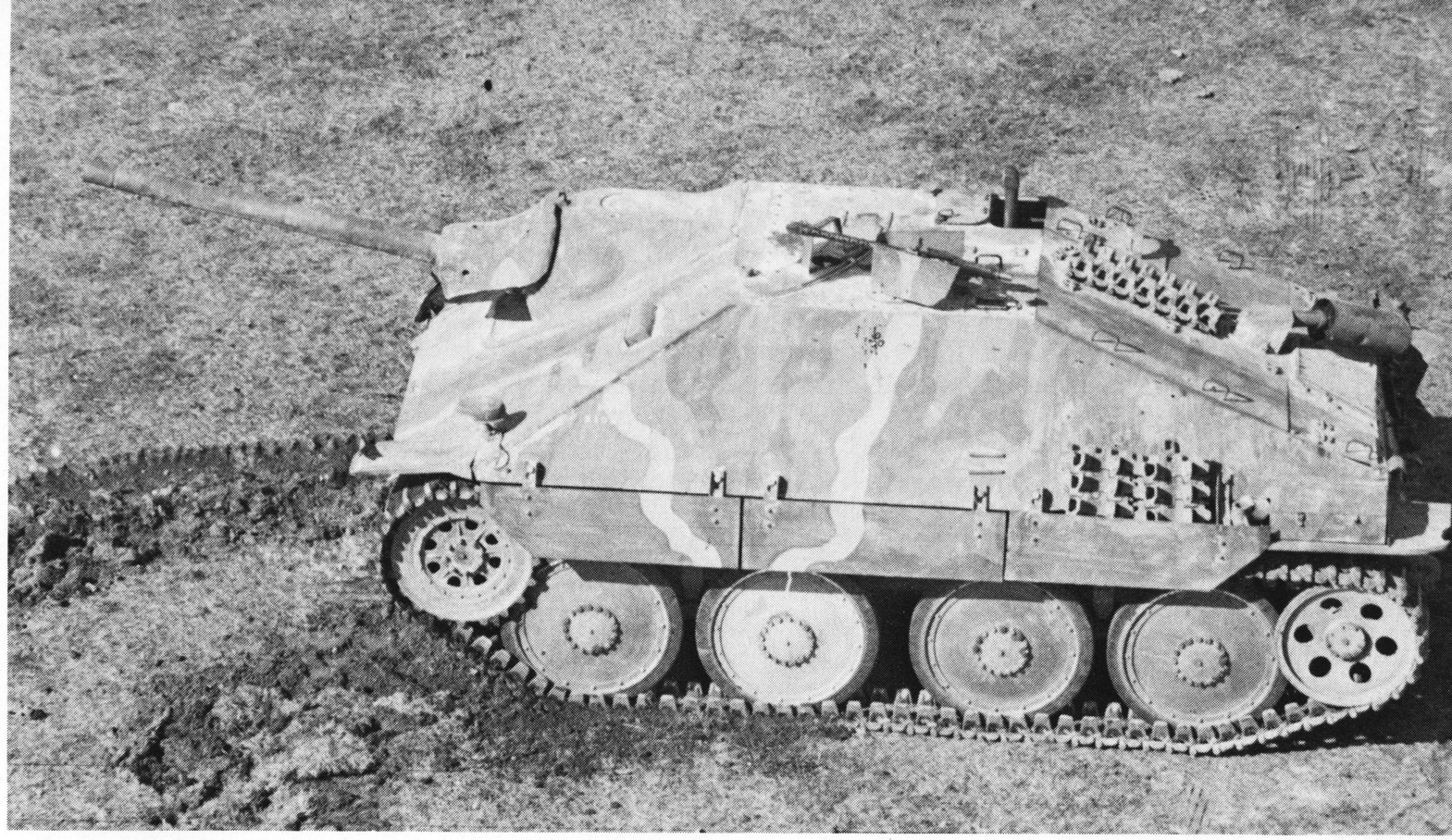
The same vehicles from the rear. On the right vehicle, the commander's hatch is closed and the half-circle stop is clearly visible. On the vehicle to the left, the hatch is open and resting on this stop which kept it in the horizontal position. Note the horizontal mufflers - later vehicles had vertical mufflers to avoid trapping grenades which might land on the engine deck. (Author)

A thoroughly camouflaged *HETZER* of the Waffen SS on the western front, Fall 1944. This vehicle carries very heavy foliage over a 3-color ambush scheme. Many *HETZERs* were extensively repainted during their service. (Author)

On the way to the front, Ukraine, 1944. The crews of the *HETZERs* usually wore normal Wehrmacht artillery uniforms, not the black uniforms of the Panzer Divisions, though late in the war some Panzer units were issued SP guns because of the shortage of tanks, in which case they retained their black uniforms. (Bundesarchiv)

A thoroughly destroyed *HETZER*. An internal explosion dislodged the whole superstructure and cracked the 20 mm side armored plate. Note the late production Saukopf. (Author)

A side-view of the fully equipped late production *HETZER* with new simplified idler wheels (compare with page 43). A commander's telescope protrudes from his hatch. This was a standard artillery 10-power binocular type, used for observation and spotting. (Authors)

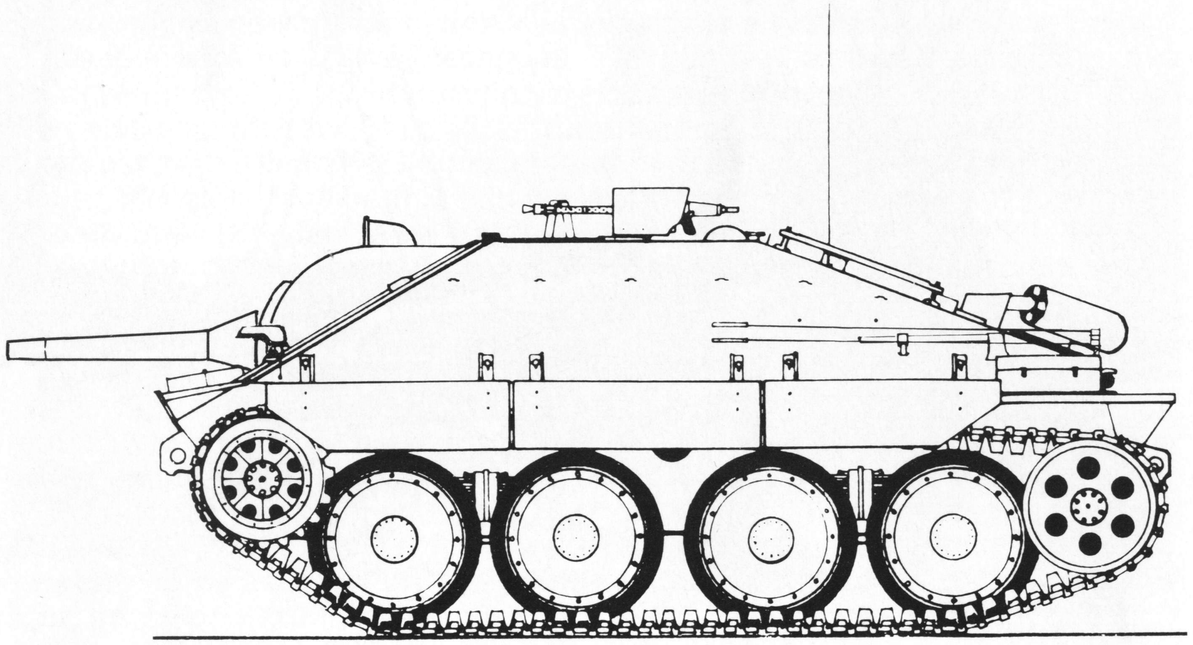


A graveyard of *HETZERs* in Southern Moravia, Czechoslovakia, where the last tank battle of the Second World War took place on May 7, 1945. General Schörner's Army Group "Mitte" (Center) still had 295 *HETZERs* on strength at the end of April 1945. (Authors)

The Swiss G-13 Tank Destroyer had a Swiss engine, dual aerials and a small cupola for commander's sight on the left side of the top plate. (Authors)

Flammpanzer 38(t) Hetzer

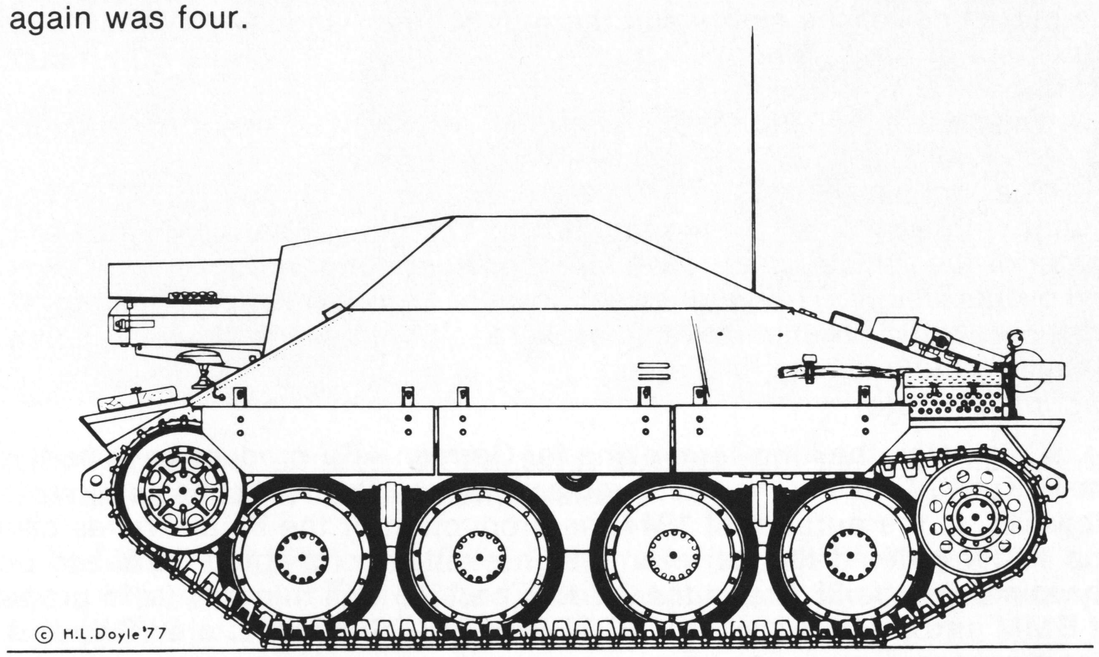
In December 1944, 20 *HETZERs* were converted to flame-throwing tanks by having their guns removed and replaced with a flame-thrower. A simulated barrel was fitted on the flame-thrower, so that the vehicle would not be so easily recognizable. Weight was 15.5 tons and again a crew of four was carried. Fuel for the flame-thrower was carried internally.



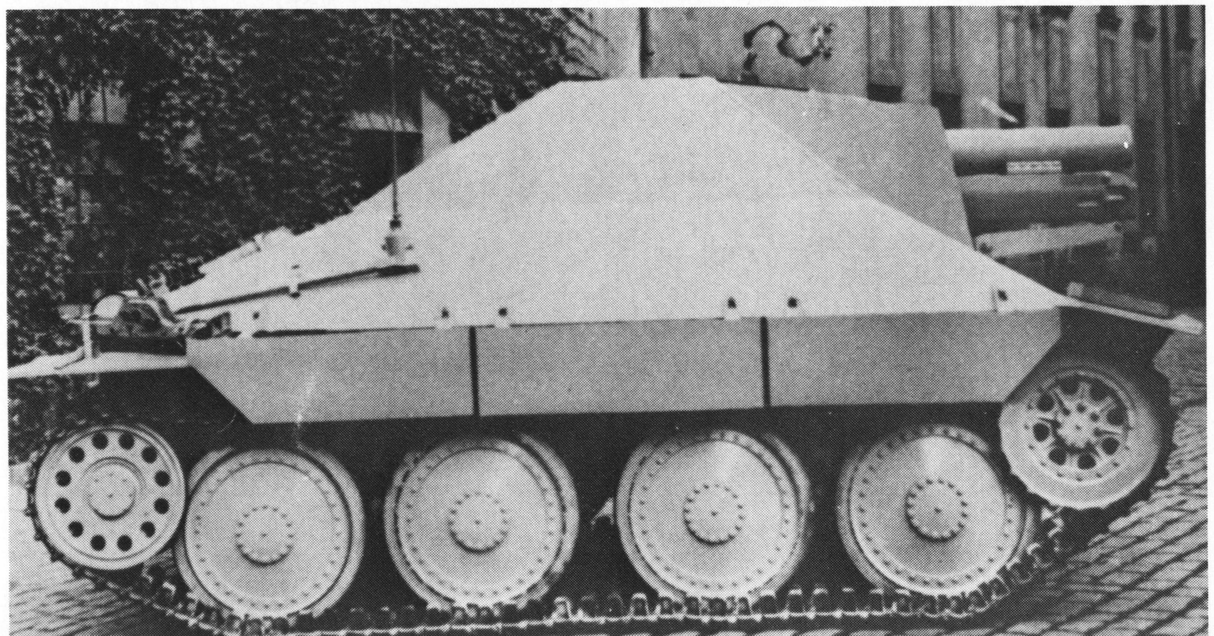
A captured Flammpanzer 38(t). The vehicle was basically unchanged. The gun was removed and a flame-thrower installed in its place. The tube over the flame-thrower was intended to simulate the 7.5 cm gun of the normal *HETZER*, thus disguising the special nature of the flame-thrower vehicles. (Author)

15cm sIG33 (Sfl) auf Jgpz 38(t) Hetzer

The troops continually demanded more self-propelled 15 cm sIG guns but, since production of the SdKfz 138/1 ausf M had terminated in 1944, it was impossible to meet these demands. However, in November 1944 it was decided to produce a new self-propelled howitzer on the *HETZER* chassis. A total of 30 of these vehicles was built between December 1944 and February 1945, 24 from new production and 6 rebuilt from *HETZERs.* The howitzer was carried in a heightened superstructure, which otherwise followed the clean *HETZER* lines. Crew again was four.



An extremely rare photograph of the 15 cm sIG 33(Sfl) auf Jagdpanzer 38(t), or a *HETZER* carrying an infantry howitzer. Only 30 of these vehicles were built late in the war and this is the first published picture of this type. The gun was the same as on the SdKfz 138/1 *GRILLE.* (Author)



Late-war Developments on PzKpfw 38(t) and PzKpfw 38(d)

Jagdpanzer 38(t) STARR (Rigid)

The original decision to proceed with the production of the *HETZER* in 1943 was on the basis that it would be built with a rigidly mounted gun. Rheinmetall-Borsig developed the gun, and Alkett was charged with adapting the vehicle. Two guns were envisaged for this project, the 7.5 cm PAK 39 (L/48) and the 10.5 cm StuH 42(L/28). From these, two prototypes on the 38(t) chassis were actually built with the PAK 39 and tested at Hillersleben. Problems with the mounting for the sights and the gun control handwheels led to the postponement of production, and so the *HETZER* with a normal gun mount was confirmed for production.

The final design of the weapon mount and sight was sent to Prague as late as April 1945, but no *STARR* vehicles were completed.

The Jagdpanzer 38(t) *STARR* was based on the normal *HETZER.* The rigid mount with a smaller ball mount allowed the gun to be moved nearer to the center of the vehicle, made for a stronger front plate, reduced nose heaviness and overall weight. The weight went down to 14 tons and speed increased to 44 km/hour. Later, production vehicles were to have been fitted with an elevation stabilizer and a coaxial MG mount.

Jagdpanzer 38(d)

Originally, the long-term plans for German AFV production specified that the PzKpfw IV chassis was to be replaced by the Pz III/IV chassis by mid 1945. However, in the autumn of 1944 the production of the Pz III/IV was canceled and Hitler ordered that all new designs henceforth would be based on two chassis only, the 38(t) and the 38(d). The 38(t) was to continue in production at BMM and SKODA as the *HETZER, HETZER STARR,* sIG (Sfl) and Aufklarungspanzer.

The 38(d) was a slightly larger, redesigned version of the 38(t), differing mainly in that it used the new TATRA 12 cylinder air-cooled diesel engine developing 220 HP, a new drive train, and new drive and sprocket wheels.

This redesigned vehicle was large enough to accommodate the 7.5 cm PAK 42 (L/70), and thus could replace the Pz IV/70. Alternative weapons were the PAK 39 (L/48) and StuH 42, so that the vehicle could replace the StuG III as well. Only prototypes were built, but it was planned that from mid 1945 Alkett, Vomag, Krupp-Gruson, MIAG and Ni-Werke would be producing 1,250 units per month.

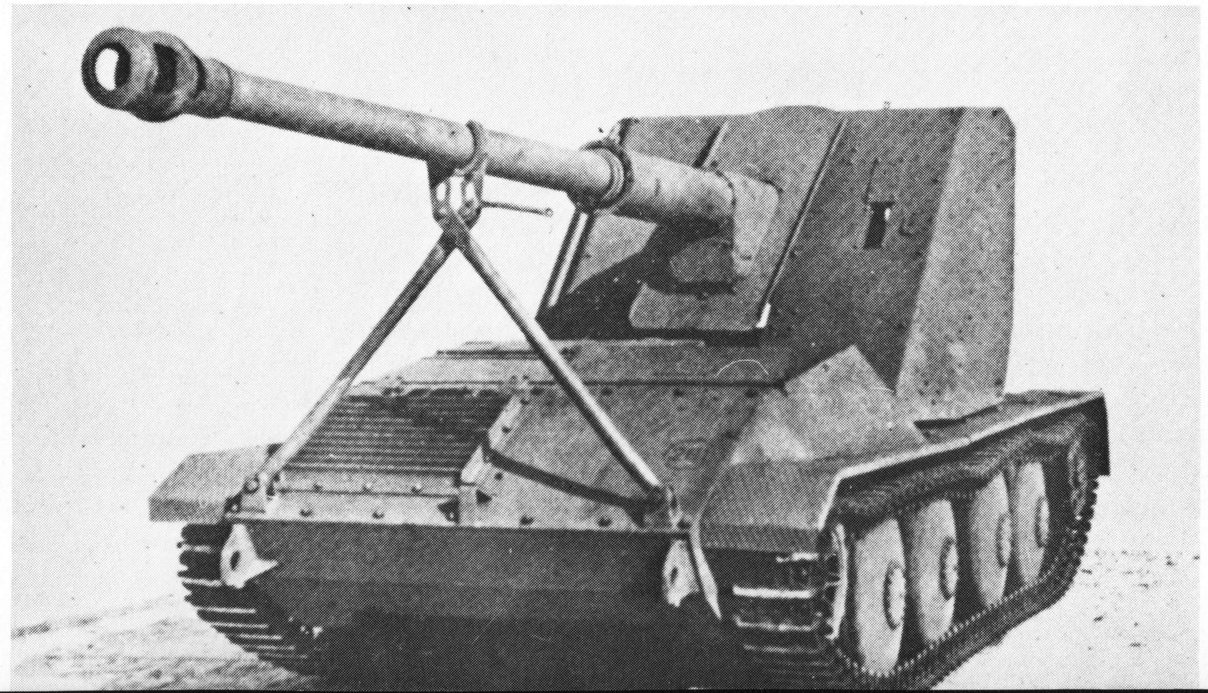
In addition to the Jagdpanzer vehicles, the 38(d) was intended as a basis for a replacement "Kugelblitz" when the Pz IV chassis was terminated. It was to use a small turret, carrying the formidable armament of two 2 cm MGs and two 3 cm MK 103 cannons, controlled by one crew member. The hydraulic traverse and elevation permitted 45° per second movement. This vehicle existed only as a wooden mock-up.

The Jagdpanzer 38(d) was supposed to weigh 16 tons with 80 mm frontal armor. The new engine would have given it a top speed of 42 km/hour and a range of 220 km on roads.

In late 1944 there was issued a specification for a fully tracked personnel carrier based on the lengthened 38(d) chassis. By adding a fifth wheel, the length was increased to 6.2 m. The armor was 30 mm front and 20 mm sides. The vehicle carried a hemispherical turret with a dual-purpose 2 cm gun and had a crew of four. It could carry 8 men in the rear section. Weight was to be 12 tons, and speed with the TATRA engine was to be 30 km/hour with a range of 200 km. Again, only a mock-up was built in 1945.

The P 1690 was the unsuccessful Steyer version of the *leichter Einheitswaffentrager.* **Running gear of this prototype was based on the R.S.O. tractor. (Author)**

One of the prototypes of the *leichter Einheitswaffentrager* **38(d), mounting the 8.8 cm PAK 43. This was a very clean and simple design, which came too late to participate in the war. (Author)**



Leichter Einheitswaffentrager

10.5 cm le FH 18/40/5- GW 638/26 (Gerat 587)
15 cm sIG 33/2- GW 638/27 (Gerat 588)

The initial large and complicated designs for Waffentrager based upon the Pz III/IV chassis were built during 1943. Then Wa.Pruf.4 decided that these were too heavy and costly to equip all units of self-propelled artillery. In February 1944 a new specification was issued for a Waffentrager (Gun Carrier) to replace the towed artillery weapons. The gun was to be dismountable, but from a low rear platform without special equipment. With 360° traverse, gun elevation was specified at -8°, + 45°. Krupp was given overall responsibility for the project, with Rheinmetall cooperating on the gun and Ardelt and Steyr developing the chassis. The front drive was adopted, as it allowed a lower gun platform. Steyr proposed a vehicle with the running gear based on the R.S.O., but the Ardelt design based on the regular 38(t) was accepted for production. The engine and drive-train were placed to the right of the driver, whose compartment could have been folded to allow increased depression of the gun.

Prototypes were built in late 1944 based on the 38(t) chassis. In this version the vehicle with the 10.5 cm gun had a weight of 13.5 tons, length 6.35 m, width 3.16 m and armor between 10 and 20 mm. Crew was again four and the PRAGA engine gave the vehicle a top speed of 35 km/hour.

Production was planned for Spring 1945 with 350 units per month by September 1945. Production vehicles were planned on a chassis with the more powerful engine and new drivetrain of the 38(d). A prototype of this Waffentrager, based on the 38(d) and mounting the 8.8 cm PAK 43, was built and successfully tested at Hillersleben as late as April 27, 1945.

Gerat 578 Waffentrager

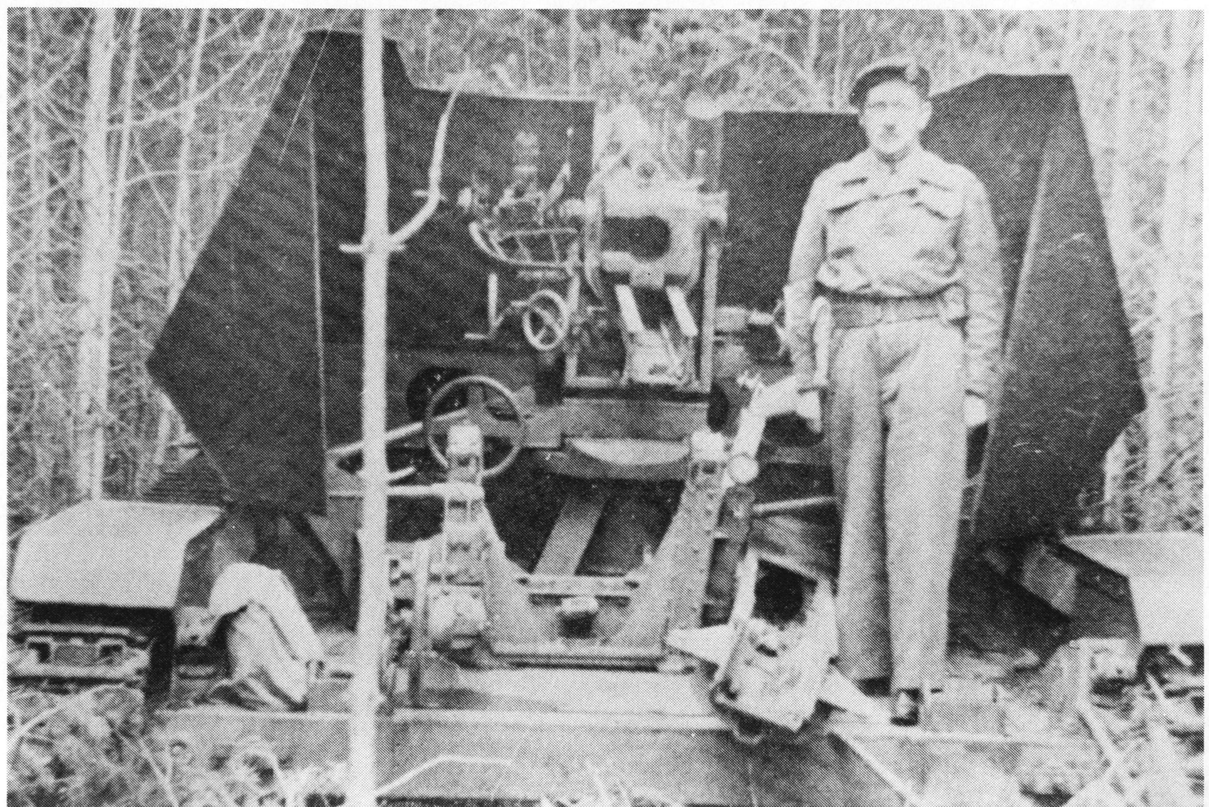
From Autumn 1944 this project was being developed simultaneously with the *leichter Waffentrager* so as to have more possibilities for the types of guns mounted. The vehicle was larger, with 6 wheels per side, and was known as Krupp I, while the four-wheel vehicle was known as Krupp II. Originally the Pz III/IV was intended for the *mittlerer Waffentrager.* The models proposed were as follows:

10.5 cm le FH 18/40/5	- GW 638/21 (Gerat 578)
15 cm sIG 33/2	- GW 638/20 (Gerat 577)
12.8 cm K 81/3	- GW 638/22 (Gerat 579)
15 cm sFH 18/6	- GW 638/23 (Gerat 580)

Certain problems arose with the length to width ratio and the design had not been adopted for production before the end of the war. Prototypes were again built using the 38(t) chassis and later the 38(d), which was envisaged for production. Armor was between 10 and 20 mm and weight was dependent on the type of gun mounted. With the 10.5 cm gun it was 13 tons, with the 12.8 cm gun 15.8 tons. Mounting the 8.8 cm PAK was also planned.

A *leichter Einheitswaffentrager* on the 38(d) chassis with the 8.8 cm PAK 43 gun. The gun is in full 8° depression. (Author)

Rear view of the Gerat 578, or *mittlerer Einheitswaffentrager* with the 10.5 cm gun on the 38(d) chassis. This picture clearly shows how the designers managed to lower the gun platform and the overall silhouette. (Author)



JgPz 38(t) *HETZER*, Western front, late autumn 1944. Unit unknown; several divisions which fought in the West had *HETZERs* in service.

SdKfz 138/1 *GRILLE* ausf. H, Russian front, 1943. Unit unknown; many vehicles did not carry divisional emblems.

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